



Western Power Pool Reserve Sharing Program Documentation

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WPP Reserve Sharing Program

A. INTRODUCTION AND OVERVIEW

Standards established by the North American Electric Reliability Corporation (NERC) require all Balancing Authorities to carry reserve for defined categories of contingencies. As permitted by NERC Standard BAL-002, Participating Balancing Authorities within the Western Power Pool (WPP) have instituted the WPP Reserve Sharing Program for Contingency Reserve.

By sharing Contingency Reserve, Participants are entitled to use not only their own “internal” reserve resources, but to call on other Participants for assistance if internal reserve does not fully cover a contingency. Except when communication links are down or the Reserve Sharing Computer System is not functioning, the WPP Reserve Sharing Program is automated, operating through direct communication of data and Contingency Reserve deployment signals between the Reserve Sharing Computer System and the Participating Balancing Authorities. The WPP Staff is responsible for preparing and submitting required NERC and WECC compliance reports, and responding to compliance audits, on behalf of the WPP Reserve Sharing Group for BAL-002. Participants are relieved of BAL-002 compliance reporting obligations, and do not report to NERC or WECC on BAL-002 compliance individually.

This document describes how the WPP Reserve Sharing Program works. It covers:

- key terminology for the WPP Reserve Sharing Program (Section B),
- an overview of the key elements of the WPP Reserve Sharing Program (Section C),
- how much Contingency Reserve each participant is required to carry (Attachment A),
- what events allow participants to deploy their own Contingency Reserve, and, if necessary, request assistance reserve, how a participant may request assistance reserve from other participants (Attachment B and Section E),
- participants’ obligations to supply assistance reserve (Section F),
- eligibility to participate in reserve sharing and how eligible Balancing Authorities become participants (Section G),
- the roles and responsibilities of participants, the WPP Staff, and others (Section H),
- general data requirements and the functions of the Reserve Sharing Computer System (Section I),
- data requirements related to requests for assistance reserve (Section J),
- how participants settle when assistance reserve is supplied under the WPP Reserve Sharing Program (Section K and Attachment D),



- tracking and reporting procedures related to the WPP Reserve Sharing Program (Section L),
- identification of “zones” within the WPP Reserve Sharing Group for delivering reserve energy, and the sequence in which assistance reserve from adjacent zones is deployed if the assistance reserve inside a given zone is insufficient to meet a contingency (Section M and Attachment C);
- backup procedures participants will use if the communication links that enable automated reserve sharing go down (Section N and Attachment E);
- procedures for addressing issues that affect the WPP Reserve Sharing Program when the process under the *Agreement Appointing Agent and Establishing Responsibilities Related to Reserve Sharing Group Compliance with BAL-002* is insufficient (Section O);
- an explanation of why the WPP Reserve Sharing Group does not activate Contingency Reserve during operation of BPA remedial action schemes that are designed to suspend automatic generation control (Attachment M),

This document includes several attachments, some of which have been noted above. The full set of attachments and their titles are as follows:

Attachment A – Calculation of Contingency Reserve Obligations; Requirements Related to Operating Reserve - Supplemental

Attachment B – Qualifying Events

Attachment C – Reserve Sharing Zone and Levels

Attachment D – Process Chart

Attachment E – Backup Procedures for WPP Reserve Sharing Program

Attachment F – Transmission Mapping and Tag Template Change Process

Attachment G – Backup Process for After-the-Fact Reserve Sharing Tags

Attachment H – Balancing Authority Areas of Participating Balancing Authorities

Attachment I – *Reserved for Future Use*

Attachment J – *Reserved for Future Use*

Attachment K – Typical Planning MSSC in Real Time, Jointly Owned Dynamic Generation Resources, Jointly Owned Static Generation Resources, and Multi Use Transformer(s) Tables

Attachment L – Cut Planes and Cut Plane Monitors Between Reserve Sharing Zones



Attachment M – Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to WPP Reserve Sharing Group Reporting ACE

Attachment N – Correlation Table of Participants, Reliability Coordinators, and Zones

B. KEY TERMINOLOGY

The terms identified below have the meanings given to them in this document for purposes of the WPP Reserve Sharing Program. Most terms defined by NERC or the WECC are conformed to the NERC or WECC definitions, but some terms' definitions may not be identical to those established by NERC or the WECC.

ACE: Area Control Error, as defined in the NERC Glossary.

Actual Net Interchange (NI_A): Actual Net Interchange, as defined in the NERC Glossary.

Agency Agreement: *The Agreement Appointing Agent and Establishing Responsibilities Related to Reserve Sharing Group Compliance with BAL-002*, as initially effective on July 1, 2008, together with any subsequent amendments or restatements.

Assistance Reserve: Contingency Reserve of one Participant that is delivered to another Participant in response to a Reserve Sharing Request.

BAL-002: For the RSG, BAL-002 means:

- NERC Reliability Standard BAL-002
- And with respect to a Participant, those provisions of the foregoing (or any substantially similar standard) applicable to the Participant by law or regulation.

Balancing Authority (BA): Balancing Authority, as defined in the NERC Glossary.

Balancing Authority Area (BAA): Balancing Authority Area, as defined in the NERC Glossary.

Balancing Authority Area MSSC: A WPP Reserve Sharing Group Participant Balancing Authority and its Balancing Authority Area's real-time MSSC based on actual configurations and provided to the Reserve Sharing Computer System via ICCP in real time.

Balancing Contingency Event: Balancing Contingency Event, as defined in the NERC Glossary.



Contingency Event Recovery Period: Contingency Event Recovery Period, as defined in the NERC Glossary.

Contingency Reserve: Contingency Reserve, as defined in the NERC Glossary.

Contingency Reserve Available (CRA): Contingency Reserve committed by a Participating Balancing Authority, which the Participating Balancing Authority reports to the Reserve Sharing Computer System, that:

- is fully deployable within ten minutes for use as Internal Reserve (except for amounts reported as already deployed for Qualifying Events);
- is fully deployable within ten minutes of an Assistance Reserve Sharing Request for delivery (except for amounts reported as already deployed for Qualifying Events).

Subject to the foregoing requirements, a Participating Balancing Authority's Contingency Reserve Available:

- will, for monitoring purposes, be deemed to include a Participant's Contingency Reserve reported as available for deployment; and
- may include Contingency Reserve purchased or otherwise transferred to the Participating Balancing Authority. Reporting ACE transferred from one Participant to another Balancing Authority Area would be considered a transfer; and
 - if arranged from another entity from outside of the Participant's zone (as detailed in Attachment C) and deployed for a valid request, details of deployment shall be reported to the WPP Staff.
- may include load committed to be shed for Contingency Reserve if a Participant is in an EEA; and
- must exclude Contingency Reserve the Participating Balancing Authority has sold to any other party.

A Participating Balancing Authority's Contingency Reserve Available plus amounts reported as Used for internal Qualifying Events and the amount deployed in response to a request for Assistance Reserves must be equal to or greater than its Contingency Reserve Obligation.

Contingency Reserve Obligation (CRO): As specified in Attachment A to this document, Contingency Reserve Obligation is the minimum amount of Contingency Reserve that must be carried by a particular Participant for its Balancing Authority Area(s) or by the WPP Reserve Sharing Group as a whole (as the context requires) to respond to Qualifying Events. Although the acronym "CRO," as used in this document, may sometimes designate base calculation of a Participating Balancing Authority's Contingency Reserve Obligation (before adjustments described in Attachment A), the written term "Contingency Reserve Obligation" as used in this document refers to the total amount of Contingency Reserve that must be carried for a



Participant's Balancing Authority Area(s) (or the WPP Reserve Sharing Group as a whole), taking into account all applicable adjustments specified in Attachment A.

Firm Demand: Firm Demand, as defined in the NERC Glossary.

Internal Reserve: The Contingency Reserve of a Participating Balancing Authority when deployed to respond to a Qualifying Event on the Participating Balancing Authority's own system (as opposed to Contingency Reserve delivered as Assistance Reserve to another Participating Balancing Authority).

Long-Term Zonal MSSC Limit: An identified normal system MSSC documented in Attachment K.1. by each zone's Participant Balancing Authority/Balancing Authority Areas.

Most Severe Single Contingency (MSSC): The Most Severe Single Contingency, as defined in the NERC Glossary.

NERC Glossary: The NERC Glossary of Terms Used in Reliability Standards.

North American Electric Reliability Corporation (NERC): A self-regulatory nonprofit organization, subject to oversight by the U.S. Federal Energy Regulatory Commission and governmental authorities in Canada, whose mission is to ensure the reliability of the bulk power system in North America. NERC develops and enforces reliability standards, assesses reliability annually via 10-year and seasonal forecasts, monitors the bulk power system, and educates, trains, and certifies industry personnel.

Northwest Power Pool Agreement: A multilateral agreement to promote cooperation among participating organizations to achieve reliable operation, coordinate generation operation and power system planning, and assist in planning of transmission within the WPP area.

Northwest Power Pool Agreement Signatory (Signatory): An entity that is a party to the Northwest Power Pool Agreement.

Operating Plan: Operating Plan, as defined in the NERC Glossary.

Operating Process: Operating Process, as defined in the NERC Glossary.

Operating Reserve: Operating Reserve, as defined in the NERC Glossary.

Operating Reserve - Supplemental: Operating Reserve – Supplemental, as defined in the NERC Glossary.

However, for purposes of the WPP Reserve Sharing Program, Operating Reserve - Supplemental must also be:



- capable of fully responding within ten minutes.

Participating Balancing Authority or Participant: An entity that (a) operates one or more Balancing Authority Areas and (b) has become a participant in the WPP Reserve Sharing Program as described in Section G.1. The terms “Participant” and “Participating Balancing Authority” are used interchangeably in this document. Attachment H contains a list of the Balancing Authority Areas of the current Participating Balancing Authorities.

Qualifying Event: Those events designated in Attachment B of this document as Qualifying Events.

Recovery Reporting ACE Target: The average value of a requesting Participant’s Reporting ACE in the 16-second interval immediately prior to the start of the Qualifying Event (or zero, whichever is less) or the average value of a Participant’s Reporting ACE that is providing Assistance Reserve in the 16-second interval immediately prior to the request of Assistance Reserves (or zero, whichever is less) based on EMS scan rate data.

Reliability Coordinator (RC): Any one or more organizations performing the NERC-registered function (or its equivalent in Canada) of reliability coordination within the Western Power Pool.

Reportable Balancing Contingency Event: Reportable Balancing Contingency Event, as defined in the NERC Glossary.

Reporting ACE: Reporting ACE, as defined in the NERC Glossary.

Reserve Sharing Computer System: The software and hardware used for automated reserve sharing under the WPP Reserve Sharing Program.

Reserve Sharing Request: A request by Participating Balancing Authority that has satisfied the conditions specified in Section E.2 for delivery of Assistance Reserve.

Reserve Sharing Zone: A designated set of Balancing Authority Area(s) within the Reserve Sharing Group that is separated from other Balancing Authority Area(s) within the Reserve Sharing Group by transmission facilities that have been shown through studies to constrain reserve deliveries, at times, between the designated set and the other Balancing Authority Areas. Attachment C to this document identifies the Reserve Sharing Zones that have been established for the WPP Reserve Sharing Program, together with the sequence through which Assistance Reserve is deployed for each Reserve Sharing Zone.

RSG Committee: The committee established under the terms of the Northwest Power Pool Agreement to administer the WPP Reserve Sharing Program.



Scheduled Net Interchange (NI_S): Scheduled Net Interchange, as defined in the NERC Glossary.

System Operator: System Operator, as defined in the NERC Glossary.

Third-Party Generation: Any generating resource that is within the metered boundaries of the Balancing Authority Area of a Participating Balancing Authority but is neither owned by nor under contract to that Participating Balancing Authority.

Western Electricity Coordinating Council (WECC): A nonprofit corporation with the mission to foster and promote reliability and efficient coordination in the Western Interconnection.

Western Power Pool (WPP): The geographic area encompassed by the electric systems of the Northwest Power Pool Agreement Signatories. There is also a separate corporation named “Northwest Power Pool” doing business as “Western Power Pool,” which provides staffing and other resources to support implementation of the Northwest Power Pool Agreement. In general, when this document refers to the Western Power Pool or the WPP, it is referring to the geographic area and the associated electric power systems of the Northwest Power Pool Agreement Signatories.

WPP Reserve Sharing Group: The group composed of all Participants, collectively.

WPP Reserve Sharing Group Long-Term MSSC Limit: The identified long-term maximum limit of the WPP Reserve Sharing Group’s MSSC is the largest Long-Term Zonal MSSC Limit as documented in Attachment K.1.

WPP Reserve Sharing Group Reporting ACE: The algebraic sum of the Reporting ACE of the Participant(s) experiencing the RBCE (or multiple BCEs occurring within 60 seconds) and the Reporting ACE of those Participant(s) delivering Assistance Reserve to the Requesting Participant(s) -see Attachment C “Reserve Sharing Zones and Levels”, including any Participant delivering transferred Assistance Reserve.

WPP Reserve Sharing Program: The procedures, data, computer programs, and related information and requirements described in this document that enable Participants to request and provide Assistance Reserve as needed to respond to Qualifying Events.

WPP Staff: The employees of the Northwest Power Pool Corporation doing business as the Western Power Pool.

C. OVERVIEW OF KEY RESERVE SHARING PROGRAM ELEMENTS



C.1. How Much Contingency Reserve a Participating Balancing Authority Must Carry (Contingency Reserve Obligation)

The processes for calculating how much Contingency Reserve each Participant must carry for its Balancing Authority Area(s), and the Contingency Reserve Obligation for the WPP Reserve Sharing Group as a whole, are set forth in Attachment A to this document along with the process chart as reflected in Attachment D.

C.2. When a Participating Balancing Authority May Deploy Contingency Reserve and Request Assistance Reserve (Qualifying Events)

A Participating Balancing Authority must experience a “Qualifying Event” before it is entitled to deploy any portion of its Contingency Reserve Obligation (as Internal Reserve) or request Assistance Reserve. The definition of Qualifying Event is set forth in Attachment B to this document.

C.3. What a Participating Balancing Authority Must Do Before Requesting Assistance Reserve

A Participating Balancing Authority must fully commit an amount of its Balancing Authority Area’s Internal Reserve that equals or exceeds the requesting Participant’s CRO requirement to the WPP before requesting Assistance Reserve to respond to a Qualifying Event. This requirement is more fully explained in Section E.2 of this document. There are also requirements concerning the timing and duration of Assistance Reserve Sharing Requests, which are set forth in Section E.3.

C.4. Where to Find Additional Information on Participant Eligibility and Obligations

Eligibility

Provisions governing eligibility to participate in the WPP Reserve Sharing Program are in Section G of this document.

Data Obligations

Section I contains information on the data requirements for the general operation of the WPP Reserve Sharing Program, as well the functions of the Reserve Sharing Computer System. Section J describes data requirements for making and responding to Reserve Sharing Requests.

Providing Assistance Reserve

Participants’ obligations to provide Assistance Reserve are explained in Section F.

Restoring Contingency Reserve Following Deployment

Section E.6 describes Participants’ obligations to restore their Contingency Reserve following deployment (either as Internal Reserve or Assistance Reserve).



D. RESERVE REQUIREMENTS

D.1. How WPP Reserve Sharing Program Rules Relate to BAL-002

The WPP Reserve Sharing Program is intended to enable the WPP Reserve Sharing Group to comply with BAL-002, as well as certain additional rules the WPP Reserve Sharing Group has elected to adopt for itself.

Participants are required at all times to meet the requirements of BAL-002, as revised, supplemented, or superseded from time to time in accordance with applicable NERC, WECC, or regulatory procedures. BAL-002 constitutes the foundation on which the WPP Reserve Sharing Group rules are built. Compliance with the WPP Reserve Sharing Group rules for Contingency Reserve is intended to ensure compliance with the BAL-002, but cannot serve to excuse any compliance failure related to the NERC or WECC standards.

NERC Standard BAL-002 requires Balancing Authorities (or reserve sharing groups) to recover, within the Contingency Event Recovery Period, from Reportable Balancing Contingency Events (subject to certain exceptions).

D.2. Contingency Reserve Obligations and Associated Requirements Related to Operating Reserve - Supplemental

Section 1 of Attachment A to this document provides a detailed explanation of how to calculate the Contingency Reserve Obligation for each Participating Balancing Authority. Section 1 also explains the manner in which the Participating Balancing Authorities' Contingency Reserve Obligations are combined to yield an aggregate obligation for the WPP Reserve Sharing Group. Section 2 of Attachment A specifies what portion of Participating Balancing Authorities' Contingency Reserve Obligations must be carried as permitted sources of Operating Reserve - Supplemental. Every Participating Balancing Authority must include in its operating procedures provisions that require it to:

- a. maintain and have available an amount of Contingency Reserve Available that is equal to or greater than its Contingency Reserve Obligation,
- b. perform such calculations as may be necessary (including consideration of transmission constraints) to ensure that it can deploy Contingency Reserve reported as available, and
- c. deploy its Contingency Reserve Available for Qualifying Events as provided in this document.

Section 3 explains the Participating Balancing Authorities calculation of Contingency Reserve Obligation(s) when communications with the Reserve Sharing Computer System are disrupted.



D.3. Additional Policies Governing Contingency Reserve

a. No Double Counting

As expressed in the policies of the RSG Committee, multiple Participants may not count the same portion of resource capacity (*e.g.*, reserves from jointly owned generation) toward any portion of their Contingency Reserve Obligations, and the WPP Reserve Sharing Group rules do not permit this.

b. Contingency Reserve Available

All Participants must continuously calculate and update their Contingency Reserve Available. A Participating Balancing Authority's Contingency Reserve Available plus amounts reported as Used for internal Qualifying Events and the amount deployed in response to a request for Assistance Reserves must be equal to or greater than its Contingency Reserve Obligation.

c. Purchased Power

To provide flexibility in recovering from a Qualifying Event, any Participant may use power purchased from another Participant (or another supplier) to meet its Contingency Reserve Obligation. Any Participant that uses purchased power for recovery must report the source Balancing Authority(s) of the purchased power, the time the power was purchased, the start time and ramp rate for the mutually agreed-upon purchased power (or transaction). The WPP Staff will be responsible for determining whether a Participant providing purchased power fulfilled its obligations to deploy Contingency Reserve to enable the WPP Reserve Sharing Group to comply with BAL-002. The requesting Participant must also arrange for transmission for delivery of the power. If the Balancing Authority from which the power was purchased is not a Participant in the WPP Reserve Sharing Program, then any failure of the selling Balancing Authority to deliver the purchased power will be deemed, for purposes of the WPP Reserve Sharing Program, as a failure to deliver of the Participant relying on the purchased power.



d. Aggregate Contingency Reserve Available

The aggregate Contingency Reserve Available for the WPP Reserve Sharing Group (together with any Contingency Reserve deployed for Qualifying Events) must at all times equal or exceed both the WPP Reserve Sharing Group's Most Severe Single Contingency and its combined Contingency Reserve Obligation.

e. RSG Committee Responsibilities; Monitoring and Follow-Up

The RSG Committee is responsible for developing guidelines and arranging for periodic reporting of the Contingency Reserve Obligation of the WPP Reserve Sharing Group and the Contingency Reserve Available within the WPP Reserve Sharing Group. WPP Staff monitors Participants' compliance with Contingency Reserve Obligations. The RSG Committee is responsible for addressing problems with deficient or poorly performing Participants, for developing remedies and proposed solutions, and for identifying and implementing any follow-up actions.

f. Determination of WPP Reserve Sharing Group's Most Severe Single Contingency

Each Participant is responsible for (i) determining, based on appropriate system modeling and applicable NERC definitions and guidelines, the Most Severe Single Contingency for its Balancing Authority Area(s), (ii) reporting its Most Severe Single Contingency determinations to the WPP Staff and making sure they are correctly reflected in Attachment K, and (iii) notifying WPP Staff whenever previously submitted Most Severe Single Contingency determinations need to be updated. The Most Severe Single Contingency for the WPP Reserve Sharing Group at any given time is set by whichever of the Participants' Most Severe Single Contingencies is greatest at that time. The RSG Committee will review, at each of its meetings (and in any event no less than once a year), the WPP Reserve Sharing Group's Operating Processes and its Most Severe Single Contingency to ensure the BAA MSSC's in Attachment K and other applicable tables are up to date and comply with applicable NERC and WECC requirements.



g. Participants' Monitoring of Real-Time Most Severe Single Contingencies

Every Participant is responsible for determining and telemetering to the Reserve Sharing Computer System, as provided in Section I.1.g, its Most Severe Single Contingency (and any adjustments upward or downward) based on real-time operating conditions. When determining Most Severe Single Contingencies in real time, each Participant must take into account its real-time generation output and its real-time generation and transmission outages. Real-time adjustments to a Participant's Most Severe Single Contingency should be captured and updated every data scan cycle.

h. All Participants' Contingency Reserve Available Constitutes WPP Reserve Sharing Program Contingency Reserve Available

The amount of Contingency Reserve carried by the Participants to meet the requirements of NERC, WECC, and the WPP Reserve Sharing Program is calculated so as to meet the needs of the WPP Reserve Sharing Group as a whole and the Contingency Reserve Available reported by each Participant is deemed to be Contingency Reserve Available to the WPP Reserve Sharing Program. Accordingly, if any Participant activates a portion of its Contingency Reserve to respond to a Qualifying Event, this will constitute activation of a portion of WPP Reserve Sharing Program Contingency Reserve, including for purposes of calculating whether the Qualifying Event constitutes a Reportable Balancing Contingency Event, even if the activation of Contingency Reserve is not for a Reportable Balancing Contingency Event and even if the affected Participant does not make a Reserve Sharing Request. Any Qualifying Event affecting any Participant constitutes a Qualifying Event for the WPP Reserve Sharing Group, and therefore, unless at the time of the Qualifying Event the affected Participant is in "non-participating" status, recovery from the Qualifying Event will be determined with respect to the WPP Reserve Sharing Group as a whole, and not the individual Participant.

i. Participant Obligation to Respond to Reportable Balancing Contingency Events

A Participant that has experienced a Qualifying Event (within its Balancing Authority Area):

- shall recover its ACE within the 15-minute Contingency Event Recovery Period for any loss greater than 50 MW, and
- must, if the Qualifying Event is equal to or greater than the threshold for Reportable Balancing Contingency Events, take all commercially reasonable actions that are necessary, in its good-



faith judgment, to enable the WPP Reserve Sharing Group to recover the WPP Reserve Sharing Group Reporting ACE to meet the requirements of BAL-002. To fulfill this obligation, the Participant is expected, among other things, to (i) deploy its Contingency Reserve, and (ii) if the Participant meets the conditions specified in Section E.2 and cannot fully recover from the Qualifying Event with reserve capability on its own system (and any purchased reserve rights), make a Reserve Sharing Request.

For Qualifying Events that result from the loss of a jointly owned facility, affected Participants must use the total MW of facility output lost to determine whether the Qualifying Event is equal to or greater than the threshold for Reportable Balancing Contingency Events (rather than whatever portion of the lost output a given Participant may have scheduled or been entitled to).

j. WPP Reserve Sharing Program Automation and Exceptions.

Every Participant is always in active status with respect to the Reserve Sharing Program. All Participants must continuously and automatically telemeter to the Reserve Sharing Computer System the data specified in Section I.1, (unless unable to do so due to failure of communications capabilities between the Participant and the Reserve Sharing Computer System). Every Participant must also indicate (unless unable to do so) whether its participation is through automatic or manual capabilities. Valid reasons for Participants to indicate manual participation mode include, but are not limited to: failure of inter-control center communications protocol (ICCP) links, suspension of automatic generation control (AGC), and system testing.

E. REQUESTING ASSISTANCE RESERVE

E.1. Qualifying Events

The Qualifying Events that permit Participants to deploy Internal Reserve, and, if the conditions specified in Section E.2 are satisfied, request Assistance Reserve, are specified in Attachment B to this document.

E.2. Action Required Before Requesting Assistance Reserve

If a Participant experiences a Qualifying Event (Attachment B parts A, B, or C), the requesting Participant is entitled to request and schedule Assistance Reserve (up to the amount lost minus their Contingency Reserve Obligation to fully recover from the Qualifying Event) through the WPP



Reserve Sharing Program **only** after the requesting Participant has made commitments to use an amount of Internal Reserve that equals or exceeds the requesting Participant's Contingency Reserve Obligation. A Participant experiencing a Qualifying Event from Attachment B part D is entitled to request Assistance Reserve to meet Firm Demand as necessary after committing to use ALL Internal Reserve. At the time of the Participant's request for Assistance Reserve, the fulfillment of the Participant's obligation to fully commit its Contingency Reserve Obligation will be evaluated taking into account any Internal Reserve lost because of the Qualifying Event (such as the loss of a generator on which reserve was being carried, whether due to conditions affecting the generator itself or due to loss of generator interconnection or transmission facilities necessary for delivery of output from the generator). The amount of Contingency Reserve carried by any unit that is lost due to the Qualifying Event will be considered deployed and added to the used Contingency Reserve reported.

If the requesting Participant improperly reflects their UsedCR less than their TotCRO_{CA}, the program will reduce the amount of Assistance Reserves provided (not including any rounding that occurs programmatically) by the amount that UsedCR is less than TotCRO_{CA}.

a. Response to an Energy Emergency Alert 3

A Participant may utilize Contingency Reserve to respond to an Energy Emergency Alert 3 (EEA 3), as described in Attachment B, Section D.

If time allows, the Participant will notify the Western Power Pool staff on the 24/7 support line 503.673.6744 of the situation, which will enable the staff to provide any clarification that may be needed.

E.3. Timing of Requests for Assistance Reserve

After experiencing a Qualifying Event as described in Attachment B parts A, B, or C and fulfilling the conditions specified in Section E.2, a Participant that requires Assistance Reserve may submit a Reserve Sharing Request, however, must do so within 105 minutes following the start of the Qualifying Event. Reserve Sharing Requests must be made in whole MWs.

Even though an eligible Participant may make a Reserve Sharing Request at any time within 105 minutes following that start of a Qualifying Event, the WPP Reserve Sharing Group may, with respect to administering the terms of the Agency Agreement, differentiate between Reserve Sharing Requests submitted promptly—that is, within four minutes following the start of the Qualifying Event—and Reserve Sharing Requests that are delayed beyond four minutes. The “four-minute rule” does not affect Participants' obligations to deliver Assistance Reserve to other Participants that have made Reserve Sharing Requests, which, as stated in Section F, applies to all Reserve Sharing Requests made within 105 minutes following the start of the Qualifying Event.

If (a) a Reserve Sharing Request is made more than four minutes following the start of the Qualifying Event, and (b) the WPP Reserve Sharing Group Reporting ACE does not recover from



the Qualifying Event within the applicable Contingency Event Recovery Period, then for purposes of any potential compliance consequences associated with the Qualifying Event, the matter will be addressed in accordance with Sections 7.2, 7.3, 8, and 9 of the Agency Agreement.

A Participant that has made a Reserve Sharing Request may rely on Assistance Reserve for a maximum period of 105 minutes from the time of the Qualifying Event.

The Qualifying Event outlined in Attachment B part D, allows for a request to be made at any time during the declared EEA 3 instead of immediately upon declaration of the EEA 3. An Assistance Reserve Request made for an EEA 3 allows the Participant to receive Assistance Reserve for up to 105 minutes from the time of the initial request. Subsequent time of an EEA 3 are not additional Qualifying Events. If a participant is out of a declared EEA 3 for more than one hour before another EEA 3 is declared that next EEA 3 declaration will be considered a new Qualifying Event.

If another Qualifying Event occurs, it is a separate event, and the Participant may make an additional request for Assistance Reserve.

E.4. Performance Metric

Deployment of Contingency Reserve by a Participant requesting Assistance Reserve will be measured through evaluation of the Participant's Pre-Reporting Contingency Event ACE through the following criteria:

- In the first fifteen-minute period after the disturbance occurs, the Participant's Reporting ACE must be above their Recovery Reporting ACE Target for at least one scan; and
- Within nineteen minutes after the disturbance occurs and after the initial Reporting ACE recovery, the Participant's Reporting ACE must stay at or above their Recovery Reporting ACE Target minus 25% of their individual BAA's L₁₀ value (as published by NERC) for at least five clock-minute average periods.
- If the request is not made within the required 4-minute period after the start of the Qualifying Event, the entity will be deemed to have not performed to the requirements of the program.

E.5. Accounting for Energy; Transmission for Delivery

Any Participant that requests Assistance Reserve must complete a WPP RSG Verification Form and must account for scheduled receipt and delivery of Assistance Reserve energy as "Contingency Reserve." Tagging of Energy with respect to deliveries of Assistance Reserve energy is implemented as described in Section K.1.c. of this document.

The delivery of Assistance Reserve is exempt from any costs or charges associated with



transmission wheeling or losses. The Reserve Sharing Computer System builds in sufficient transmission capacity for delivering Assistance Reserve (see Section M). There may be incremental transmission usage between some Reserve Sharing Zones, but this usage is effectively limited in real-time up to the current System Operating Limit (SOL) of the transmission facilities making up the cut planes between Reserve Sharing Zones (subject to certain further limitations with respect to particular cut planes as described the *WPP RSG Cut Planes and Derivation Limits* document). Participants in the WPP Reserve Sharing Program recognize the regional benefits associated with the WPP Reserve Sharing Program and have agreed to waive any rights to financial settlement for any transmission needed to deliver Assistance Reserve to other Participants.

E.6. Restoring Reserves

If a Participant uses any portion of its Contingency Reserve Obligation in response to a Qualifying Event (whether use is limited to Internal Reserve or requires additional Assistance Reserve), the Participant should take appropriate action to restore Contingency Reserve Available on its system (to at least the level of its Contingency Reserve Obligation) as promptly as practicable. The Participant may continue to deploy its Contingency Reserve for the Qualifying Event and mark it as UsedCR for up to 105 minutes.

F. OBLIGATION TO PROVIDE ASSISTANCE RESERVE

Each Participant is obligated to deliver Assistance Reserve up to the full amount of its Balancing Authority Area's Contingency Reserve Obligation (after deducting for any capacity that has been deployed to respond to any Qualifying Events) in response to any Reserve Sharing Request that has met the requirements in Section E.2 and is made within 105 minutes following the start of the Qualifying Event.

Deployment of Contingency Reserve by a Participant providing Assistance Reserves will be measured through evaluation of the Participant's Reporting ACE through the following criteria:

- In the first ten-minute period after the request for Assistance Reserve, or any increase thereof, is received, the Participant's Reporting ACE must be above their Recovery Reporting ACE Target for at least one scan; and
- Within fifteen minutes of the request for Assistance Reserves and after the initial Reporting ACE recovery, the Participant's Reporting ACE must stay at or above their Recovery Reporting ACE Target minus 25% of their individual BAA's L₁₀ value (as published by NERC) for at least five clock-minute average periods.

If a Participant has deployed all or a portion of its Balancing Authority Area's Contingency Reserve Obligation to respond to a Reserve Sharing Request by another Participant and then, while the deployment is still in effect, experiences its own Qualifying Event, the responding Participant may



deploy whatever portion of its Contingency Reserve Obligation is required to recover from its own Qualifying Event. If the conditions necessary to receive Assistance Reserve are satisfied, the Participant may also make a Reserve Sharing Request even if one or more other Participants' Reserve Sharing Requests remain in effect. If the WPP Reserve Sharing Group experiences sequential Qualifying Events that require one or more responding Participants to deploy Assistance Reserve that was being provided to other Participants, the Reserve Sharing Computer System will recalculate the distribution of Assistance Reserve and allocate to remaining Participants any amount necessary to replace the deployed Assistance Reserve.

G. ELIGIBILITY FOR AND PARTICIPATION IN RESERVE SHARING PROGRAM

G.1. Eligibility to Participate in the WPP Reserve Sharing Program

All Balancing Authorities that operate Balancing Authority Areas located within the Western Power Pool and that elect to become Northwest Power Pool Agreement Signatories must participate in the WPP Reserve Sharing Program and must become parties to the Agency Agreement.

G.2. Treatment of Third-Party Generation

Each Participating Balancing Authority must, in calculating its Contingency Reserve Obligation, include all generation that is within its metered boundaries and for which the Participating Balancing Authority has an obligation or has agreed to provide Contingency Reserve. The term "Qualifying Event" with respect to a Participating Balancing Authority applies to any generation (including Third-Party Generation) that has been included in that Participating Balancing Authority's calculation of its Contingency Reserve Obligation.

H. ROLES AND RESPONSIBILITIES

H.1. Participant Responsibilities

Participants are responsible for abiding by the WPP Reserve Sharing Group rules specified in this document, together with any corresponding policies adopted by the RSG Committee. These include requirements to meet Contingency Reserve Obligations, to provide Assistance Reserve when requested by another Participant, and to settle for deliveries of Assistance Reserve energy as provided in Section K.

Participants must also provide and receive data for the WPP Reserve Sharing Program in accordance with Section I for general operation of the WPP Reserve Sharing Program and Section J for making and responding to requests for Assistance Reserve.



a. Notifications

Participants must notify the WPP Staff and the WPP Reserve Sharing Group Committee whenever a substantive change to the Participant's Balancing Authority Area is planned to occur. This would include, at a minimum, a change in Balancing Authority Area footprint or boundary, transfer of load or generation with another Balancing Authority Area, or any change that could have an impact to the deliverability of contingency reserves or the MSSC within the Participant's zone. This notification should occur prior to any changes being made to allow adequate time for appropriate impact studies to be completed and Program Document or computer program modifications, as needed.

The Participating Balancing Authorities are responsible to provide planned system failover notifications that may have an impact to data being telemetered to the Reserve Sharing Computer System to WPP Staff via an email to WPPRSG@westernpowerpool.org.

b. Program Monitoring

In addition, the Participating Balancing Authorities are responsible to monitor the WPP Reserve Sharing Group "heartbeat" (as explained in Section I.1.n). If any Participating Balancing Authority discovers the WPP Reserve Sharing Group heartbeat is inactive for a period of 10 minutes they should contact an adjacent Participating Balancing Authority to confirm this is a system-wide problem and not just a problem with their system or communication link. If the problem is believed to be system-wide that Participating Balancing Authority will contact the WPP Staff.

If a Participating Balancing Authority's heartbeat appears to be inactive at the time it needs to make a Reserve Sharing Request, it should initiate the Reserve Sharing Request as described in Attachment E – *Backup Procedures for WPP Reserve Sharing Program*.

It is all Participating Balancing Authorities' responsibility to inform all other Participating Balancing Authorities and the WPP Staff if they have discovered a problem. In addition, Participating Balancing Authority System Operators and RSG Committee Representatives can e-mail or call with any questions or issues. WPP Staff will respond as soon as possible.

WPP Reserve Sharing Group Program Support Contact Information:

- For immediate response the on-call support number at 503.673.6744.
- In addition, for non-urgent issues, you may email "WPPRSG@westernpowerpool.org". WPP Staff will respond to after-hours emails the next business day during normal work hours.

H.2. WPP Staff Monitoring and Reporting Responsibilities

The WPP Staff is responsible for monitoring Participants' compliance with Contingency Reserve



Obligations. The RSG Committee is responsible for addressing problems related to Participant deficiencies or poor performance, for developing remedies and presenting proposed solutions, and for identifying and implementing any follow-up actions.

The WPP Staff is responsible for receiving WPP RSG Verification Forms from Participants that have made Reserve Sharing Requests under the WPP Reserve Sharing Program. The WPP Staff will perform analysis on each Reportable Balancing Contingency Event that the WPP Reserve Sharing Group experiences with relationship to Participant's adherence to the Program Rules.

Subject to appropriate confidentiality and use restrictions (as determined by the WPP Staff), the WPP Staff may make available, to a Participant hosting implementation of an ACE Diversity Interchange arrangement, data related to the WPP Reserve Sharing Program for the purpose of enabling the hosting Participant to harmonize the operation of the WPP Reserve Sharing Program and the implementation of the ACE Diversity Interchange arrangement.

WPP Staff is responsible for monitoring and assisting in the implementation of the WPP Reserve Sharing Program. While not staffed 24x7, WPP Staff will provide on-call 24x7 support as may be required. Although Participants are responsible for telemetering data to the Reserve Sharing Computer System as described in Sections I.1, and I.2, if WPP Staff notices missing information, WPP Staff will follow up with the affected Participant(s).

WPP Staff can review the status of each of the individual Participating Balancing Authority's data including heartbeats. If a WPP Staff member discovers a Participating Balancing Authority's heartbeat is inactive, he or she will follow up with the affected Participating Balancing Authority and document any findings by e-mail to all Participating Balancing Authorities.

H.3. RSG Committee Reporting Responsibilities

The RSG Committee is responsible for developing guidelines and arranging for periodic reports on the Contingency Reserve Obligation of the WPP Reserve Sharing Group and Contingency Reserve Available within the WPP Reserve Sharing Group as a whole.

I. GENERAL DATA REQUIREMENTS

This section describes data responsibilities for Participants in the WPP Reserve Sharing Program. Although in general all required data are relayed automatically to the Reserve Sharing Computer System, all Participants must also have the capability to enter data manually if communications between Participating Balancing Authorities and the Reserve Sharing Computer System are interrupted.



I.1. Data Telemetered from Participating Balancing Authorities to the Reserve Sharing Computer System

Each Participant must telemeter the following data to the Reserve Sharing Computer System for each of its Balancing Authority Areas within the Western Power Pool:

- a. the portion of its Contingency Reserve Available that is Operating Reserve - Spinning ($TotCSR_{CA}$) ready for use as Internal Reserve or Assistance Reserve,
- b. total Contingency Reserve Available ($TotAvailCR_{CA}$) ready for use as Internal Reserve or Assistance Reserve,
- c. its total Balancing Authority Area Load (LOAD), as used to calculate its Contingency Reserve Obligation (CRO_{CA}) in accordance with Attachment A,
- d. its total Balancing Authority Area Generation (GEN), as used to calculate its Contingency Reserve Obligation (CRO_{CA}) in accordance with Attachment A,
- e. any portion of its reported Contingency Reserve Available already in use ($UsedCR_{CA}$),
- f. its Reporting ACE (ACE_{raw}), as calculated according to the NERC glossary of terms,
- g. its Most Severe Single Contingency ($MSSC_{CA}$),
- h. Scheduled Net Interchange values (NET_SCHED_INT), as used to calculate an equivalent ACE,
- i. Actual Net Interchange values (NET_ACTUAL_INT), as used to calculate an equivalent ACE,
- j. its Reserve Sharing Request dynamic schedule ($RSReq_{CA}$),
- k. request for Reserve Sharing Status Indication ($RSReq_Confirm_{CA}$)
 - No Request = Status Open
 - Assistance Requested = Status Closed,
- l. reserve sharing response ($RSResp$),
- m. indication (manually entered) of availability to provide Assistance Reserve (Participating Balancing Authorities not available to provide Assistance Reserve can still receive Assistance Reserve) ($BA_Participate$)
 - Cannot Provide Assistance Reserve = Status Open
 - Can Provide Assistance Reserve = Status Closed,
- n. status of the communications links that enable it to participate in the WPP Reserve Sharing Program on an automated basis, also known as its “heartbeat” (signaled by continuing changes to indicator data not to exceed 999,999, which the Reserve Sharing Computer System monitors at 10-second intervals; if there is no change to the data for a period of 60 seconds, the Participating Balancing



Authority is presumed to be able to participate in the WPP Reserve Sharing Program only through manual action; when the indicator data begin to change again, the Participating Balancing Authority is presumed to have regained the ability to participate in the WPP Reserve Sharing Program through automated action) (BA_heart_beat), and

- o. its frequency bias setting. (BA_FBS)
- p. its meter error term (BA_lme)
- q. its ATEC term (BA_ATEC)
- r. its ADI term if not included in Scheduled Net Interchange or Actual Net Interchange values above (BA_ADI)

I.2. Cut Planes

Explanatory note: As used in this Section I.2, the term “cut plane” is intended generally to describe an imaginary line separating two areas within a transmission system (or two different transmission systems) to enable the evaluation of flow of electrical energy on multiple lines connecting these two areas (or systems). The cut planes referred to below are sets of multiple lines connecting Reserve Sharing Zones.

Participants that are operators of the major transfer facilities must telemeter to the Reserve Sharing Computer System actual flow ($ACTUAL_{PATHnn}$) and transfer limit ($LIMIT_{PATHnn}$) for each direction of flow for the cut planes, as identified in Attachment L, between Reserve Sharing Zones as described in the next Section I.3.e.

The RSG Committee maintains a separate non-public document, *WPP RSG Cut Planes and Derivation Limits*, that more fully details the major transfer facilities and any associated Participant derivation information, including applicable calculations for which the Participant that monitors that cut plane, address the evaluation of flow of electrical energy on multiple lines.

While this is a separate non-public document and not included in the Reserve Sharing Program Documentation, it is the policy of the RSGC for all applicable cut plane monitors to maintain the *WPP RSG Cut Planes and Derivations Limits* document to ensure reliable operation of the cut planes to respect the flow and transfer limits as identified.

I.3 Functions of the Reserve Sharing Computer System

Except when communications links or the necessary computer capabilities are down, the Reserve Sharing Computer System performs the tasks listed below. WPP Staff is able to monitor the Reserve Sharing Computer System and receive all Participants' data described in Sections I.1 and I.2. If WPP Staff notices that there is missing information, WPP Staff will consult directly with any Participating Balancing Authorities for which information is missing to make any necessary corrections.



- a. Determine the Most Severe Single Contingency for the WPP as a whole ($MSSC_{WPP}$).
- b. Determine the aggregate Contingency Reserve Obligation for the WPP as a whole ($TotCRO_{WPP}$) to ensure that the Contingency Reserve Available within the WPP Reserve Sharing Group is sufficient to cover the Contingency Reserve Obligation for the WPP as a whole.
- c. Determine the Contingency Reserve Obligation ($TotCRO_{CA}$) for each Participant's Balancing Authority Area(s), calculated in accordance with Attachment A.
- d. Compute a pro rata allocation of any applicable adjustments to Contingency Reserve Obligations ($AdjCRO_{MSSC_{CA}}$ and $AdjCRO_{ZONE_MSSC_{CA}}$, which together are summed into $AdjCRO_{CA}$) for each Participant's Balancing Authority Area(s) to address shortages with respect to the MSSC for the WPP Reserve Sharing Group or within a particular Reserve Sharing Zone.
- e. In calculating any potential need to carry additional Contingency Reserve within a Reserve Sharing Zone, take into account transfer limits ($LIMIT_{Pathnn}$), actual flows ($ACTUAL_{Pathnn}$), and, where applicable, scheduled flows ($SCHED_{Pathnn}$) on the transmission facilities connecting that Reserve Sharing Zone to its adjacent Reserve Sharing Zone(s). With respect to the facilities linking the Pacific Northwest-Montana Reserve Sharing Zone with the Northern California Reserve Sharing Zone, this also reflects limits on ownership rights.
- f. Maintain a pro rata allocation of the Reserve Sharing delivery dynamic schedule based upon each $TotCRO_{CA}$ for each Participant's Balancing Authority Area(s) relative to the $TotCRO_{WPP}$.
- g. Upon receipt of a Reserve Sharing Request dynamic schedule from a Participating Balancing Authority that is requesting Assistance Reserve, validate and activate the pro rata sharing signal to all other Participating Balancing Authorities.
- h. Whenever Assistance Reserve is being delivered across facilities connecting two different Reserve Sharing Zones, continue to monitor actual flows ($ACTUAL_{Pathnn}$) in comparison to transfer limits ($LIMIT_{Pathnn}$) between the Reserve Sharing Zones, and, to the extent actual flows fall below transfer limits, allow deliveries to increase if needed to fully respond to the Reserve Sharing Request.
- i. Maintain hourly integrated Reserve Sharing Request dynamic schedules from each Participating Balancing Authority.
- j. Calculate a WPP Reserve Sharing Group ACE (ACE_{WPP}) for entire WPP Reserve Sharing Group.



- k. Calculate an equivalent WPP Reserve Sharing Group Reporting ACE for each possible Requesting Zone's Level 1 Participants and responders (ZONEACE_XXX – See Attachment C).¹

Each Participating Balancing Authority should consistently review the Contingency Reserve Obligation (CRO_{CA}) value transmitted to it by the Reserve Sharing Computer System to confirm the accuracy of the calculation and should promptly contact WPP Staff if it suspects there may be an error in the Reserve Sharing Computer System's calculation.

I.4. Data Telemetered from the Reserve Sharing Computer System to Participating Balancing Authorities

The Reserve Sharing Computer System makes available to each Participant the following telemetered data:

- a. The Reserve Sharing Computer System's calculation of total Contingency Reserve Obligation (TotCRO_{CA}) for the Participant's Balancing Authority Area(s), as described in Attachment A. This includes, as applicable,
 - base Contingency Reserve Obligation (CRO_{CA}),
 - any adjustment to address shortages with respect to the MSSC for the WPP Reserve Sharing Group (AdjCRO_MSSC_{CA}),
 - any adjustment to address shortages within a particular Reserve Sharing Zone (AdjCRO_ZONE_MSSC_{CA}), and
 - combined adjustments to Contingency Reserve Obligation (AdjCRO_{CA}) to address shortages with respect to the MSSC for the WPP Reserve Sharing Group or within a particular Reserve Sharing Zone.
 - total Contingency Reserve Obligation (TotCRO_{CA}) as adjusted to address shortages with respect to the MSSC for the WPP Reserve Sharing Group or within a particular Reserve Sharing Zone.
- b. If the total Contingency Reserve Available within the WPP Reserve Sharing Group (TotAvailCR_{WPP}) is less than to total Contingency Reserve Obligation for the WPP Reserve Sharing Group (TotCRO_{WPP}), the WPP Reserve Sharing Computer System calculates and telemeters necessary adjustments to total Contingency Reserve Obligation (TotCRO_{CA}) for each Participant's Balancing Authority Area(s) to reflect the shortfall in total Contingency Reserve Available within the WPP Reserve Sharing Group (AdjCRO_SHORT_{CA}). Each Participant must carry this adjustment amount in addition to its TotCRO_{CA}.

¹ These equations are calculated and distributed in the same manner as the points calculated within the Program.



- c. Reserve Sharing Delivery dynamic schedule (RSDel) for Participating Balancing Authority that is delivering Assistance Reserve:²

$RSDel_{CA(Level\ 1)} = RSReq_{CA} * (TotCRO_{CA} / S\ TotCRO_{CA(Level\ 1)})$, limited to the portion of its Contingency Reserve Obligation ($TotCRO_{CA}$), if any, the Participating Balancing Authority is able to deliver at that time (after accounting for any portion of its $TotCRO_{CA}$ previously deployed)

Where,

$$RSReq_{CA} \leq MW_{LOSS} - TotCRO_{CA}$$

- If $S\ RSDel_{CA(Level\ 1)} < RSReq_{CA}$, then

$$RSReq_{Short} = RSReq_{CA} - S\ RSDel_{CA(Level\ 1)}$$

and,

$$RSDel_{CA(Level\ 2)} = RSReq_{Short} * (TotCRO_{CA} / S\ TotCRO_{CA(Level\ 2)}).$$

- If the amount of Assistance Reserve that can be delivered from the Participating Balancing Authorities at Level 2 is insufficient to meet whatever portion of the Reserve Sharing Request remains after deliveries from Participating Balancing Authorities at Level 1, the process is repeated as described above for Level 3, and, if applicable, Level 4 and Level 5.
- If there are multiple requests for Assistance Reserve, the $RSDel_{CA}$ would be calculated to reflect the sum of all amounts to be delivered as Assistance Reserve to requesting Participants, but the Reserve Sharing Computer System separately tracks the amounts to be delivered to each of the requesting Balancing Authorities (so that payment and return energy obligations can be properly determined).
- Requests for Assistance Reserve are not allowed to exceed the Contingency Reserve Available for the WPP Reserve Sharing Group as a whole.
- Transmission constraints are included the Reserve Sharing Computer System's calculation of how much Assistance Reserve can be delivered from each Level for each Reserve Sharing Zone, and so do not need to be separately computed and applied.

- d. Delivery of Reserve Sharing Confirmation Flag ($RSDel_Confirmed_{CA}$),

² (All “CA” designations in these formulas refer to the particular Participating Balancing Authority to which a given value applies. References to “Levels” are to the Levels related to the Reserve Sharing Zones, as identified in Attachment C.)



No Request = Status Open

Assistance Requested = Status Closed

- e. Reserve Sharing time remaining for the requesting Balancing Authority from the most recent request for Assistance Reserve (TimeLeft)
- f. Number of active Reserve Sharing Requests (RSAct)
- g. The MSSC for the WPP Reserve Sharing Group as a whole ($MSSC_{WPP}$)
- h. The Contingency Reserve Obligation for the WPP Reserve Sharing Group as a whole ($TotCRO_{WPP}$)
- i. The Contingency Reserve Available for the WPP Reserve Sharing Group as a whole ($TotAvailCR_{WPP}$)
- j. WPP Reserve Sharing Group ACE (ACE_{WPP})
- k. Reportable Balancing Contingency Event (RpDist)

Where,

$RpDist$ = the lesser of (a) $0.8 * MSSC_{WPP}$ or 500 MW

- l. Total number of minutes remaining since the most recent request for the WPP (RSTimRem)
- m. The indication that the Reserve Sharing Computer System and associated communication links are operational is also known as the WPP Reserve Sharing Group “heartbeat.”
- n. When activity on the Reserve Sharing Computer System is due to testing rather than power system conditions, this is indicated by a testing flag. WPP Staff will arrange for this flag to be set while testing is underway, which may include helping a Participating Balancing Authority test its system(s). (The WPP Reserve Sharing Program is fully operational while testing is in progress and Reserve Sharing Requests may be made normally. If there is a Reserve Sharing Request during testing, the test will be terminated.)
- o. The Reserve Sharing Computer System’s calculation for each Reserve Sharing Zone as reflected in Attachment C,
 - The MSSC ($MSSC_{zone}$)
 - The total Contingency Reserve within the zone ($TOTCR_{zone}$),
 - Calculation of the zonal Contingency Reserve Obligation ($TOTCRO_{zone}$),
 - The total Contingency Reserve Available to the zone ($TOTCRA_{zone}$),
- p. The Reserve Sharing Computer System’s information or calculation for each cut plane between Reserve Sharing Zones as reflected in in Section I.2.



- The actual flow ($ACTUAL_{PATHnn}$) and transfer limit ($LIMIT_{PATHnn}$) for each direction of flow
- The actual room ($ROOM_{PATHnn}$) and reserve ($RESERVE_{PATHnn}$) for each direction of flow

I.5. Informational Data Telemetered from the Reserve Sharing Computer System to the Reliability Coordinators

The Reserve Sharing Computer System telemeters to the Reliability Coordinators the following informational data:

- a. The MSSC for the WPP Reserve Sharing Group as a whole ($MSSC_{WPP}$),
- b. The Reserve Sharing Group ACE (ACE_{WPP}),
- c. The Contingency Reserve Obligation for the WPP Reserve Sharing Group as a whole ($TotCRO_{WPP}$), and
- d. The Contingency Reserve Available for the WPP Reserve Sharing Group as a whole ($TotAvailCR_{WPP}$).
- e. Data for each of the Reserve Sharing Zones as follows:
 - The MSSC for the Reserve Sharing Zone,
 - The Contingency Reserve Obligation for the Reserve Sharing Zone, and
 - The Contingency Reserve Available for the Reserve Sharing Zone.

Attachment N is a correlation table of Participants, Reliability Coordinators, and Reserve Sharing Zones.

J. DATA REQUIREMENTS RELATED TO RESERVE SHARING REQUESTS

The general data requirements for Participants in the WPP Reserve Sharing Program are described in Section I. The provisions below explain the steps for making and responding to Reserve Sharing Requests.

**J.1. Requesting Participant**

- a. A Participant that has met the conditions to make a Reserve Sharing Request (as described in Section E.2) must calculate the amount of Assistance Reserve for which it is eligible, enter the deficient amount needed into a Reserve Sharing Request dynamic schedule, and send the request, at a zero-ramp span time, to the Reserve Sharing Computer System.

Where,

$$RSReq_{CA} \leq MW_{LOSS} - TotCRO_{CA}$$

$$RqstRSSI = 1.$$

At this point in time, the Participant's anticipated CR_{CA} should be zero if their CR_{CA} was equal to $TotCRO_{CA}$. If CR_{CA} was higher than $TotCRO_{CA}$, CR_{CA} should decrease by the amount shown as $UsedCR_{CA}$.

$$TotCRO_{CA} - UsedCR_{CA} \leq 0$$

- b. Requesting Participants are expected to restore the Contingency Reserve Available on their systems, to at least the level of their Contingency Reserve Obligations, as promptly as practicable, but in no event longer than 105 minutes from the start of the Qualifying Event.
- c. As a safeguard, the Reserve Sharing Computer System will remove the Reserve Sharing Request dynamic schedule within 110 minutes following the Reserve Sharing Request.

$RSReq_{CA} = 0$, ten-minute ramp to zero beginning at 100 minutes after the request first started.

$$RqstRSSI = 0$$

- d. If during the request the Requesting Participant detects a Reserve Sharing Computer System failure, it should assume that the Responding Participants will continue to deliver reserves for the full 110 minutes as called for in J.1.d.
- e. If a Participant makes a Reserve Sharing Request for an initial Qualifying Event and, before the end of the 105 minutes during which the Participant is allowed to rely on Assistance Reserve (as provided in Section E.3 of this document), experiences one or more additional Qualifying Events for which it wishes to request Assistance Reserve, the Participant may initiate additional Reserve Sharing Requests by (1) activating the additional Reserve Sharing Request toggle on the Reserve Sharing Computer System (which indicates that the requesting Participant has two or more active Reserve Sharing Requests), then (2) revising the deficient amount needed, as calculated in accordance with Section J.1.a above, to include the additional amount of Assistance Reserve required for the additional Qualifying Event(s). The activation of any additional Reserve Sharing Request will re-set the overall event timer to 110 minutes (the permitted 105-minute reliance period plus an additional five



minutes to complete ramping). While the Reserve Sharing Computer System continues to run separate event timers for each Qualifying Event, Participants are able to see only the time remaining for a Participant's last-initiated Reserve Sharing Request, and not for any of its previously initiated Reserve Sharing Requests.

J.2. Responding Participants

- a. Responding Participants should initiate a response to a Reserve Sharing Delivery dynamic schedule from the Reserve Sharing Computer System by including $RSDel_{CA}$ in their ACE equation shown below. A security check on the Reserve Sharing Request dynamic schedule includes a crosscheck such that Reserve Sharing Status Indication = 1. The sign of the $RSDel_{CA}$ is negative for Participating Balancing Authorities requesting Assistance Reserve. The sign of the $RSDel_{CA}$ is positive for Participating Balancing Authorities providing Assistance Reserve.

Where,

$$ACE_{CA} = (NI_A - NI_S) - 10B (F_A - F_S) - I_{ME} + I_{ATEC}$$

$$NI_S = S(\text{adjacent Balancing Authority schedules}) + S(\text{dynamic schedules}) + RSDel_{CA}$$

Each responding Participant will maintain an internal timer equal to $TotTmRem_{WPP}$ and continue to count down this timer to zero if the value from the Reserve Sharing Computer System fails to decrement (indicating probable loss of data link). Whenever a responding Participant is operating in an assumed disconnected mode, $RSDel_{CA}$ is internally frozen. When the internal count-down timer reaches zero, the responding Participant should set $RSDel_{CA}$ to zero.

K. SETTLEMENT

A Participant that receives Assistance Reserve energy must compensate all Participants that deliver Assistance Reserve energy financially.

Participants may mutually agree to an alternate procedure, provided the affected Participants can account for the transaction appropriately.

This section explains how the data used for settlement is developed and the process through which Participants complete financial settlement. Attachment D includes a settlement process chart as reference of this process.



K.1. Settlement Data

Each hour, whether or not there has been a Reserve Sharing Request, the Reserve Sharing Computer System will transmit the hour-ending integrated dynamic schedule quantities (MWh) to all Participating Balancing Authorities. These data will be referred to as “Settlement Data” and will include source/sink energy information without consideration of transmission “wheeling” through intervening systems. Settlement Data are rounded and used to develop adjacent Balancing Authority interchange schedules. Settlement Data will be used to construct the official reserve sharing energy matrix (the “Matrix”).

a. Rounding

Settlement Data are rounded to whole integers to accommodate scheduling and accounting systems:

- All Settlement Data quantities less than 1 MWh will be rounded to 0 MWh (e.g., 0.7 yields 0 MWh). This practice will reduce nuisance scheduling of small quantities.
- For quantities equal to or greater than 1 MWh, conventional rounding practices will apply. Fractional quantities less than 0.5 will be rounded down (e.g., 27.2 yields 27 MWh) and fractional quantities of 0.5 or greater will be rounded up (e.g., 27.9 yields 28 MWh). After rounding, Settlement Data are compiled into the matrix.

b. Mapping of Energy Schedules

Energy schedules must be mapped to adjacent Balancing Authorities to allow proper energy accounting consistent with existing reliability standards and regional business practices. The Participants have agreed to a pre-defined set of tag templates to account for the transmission mapping for the deliveries of Assistance Reserve Energy. This mapping includes wheeling parties between nonadjacent Balancing Authorities, and as further explained in Section K.1.c below, serves as the basis to create after-the-fact tags.

c. Automatic Tagging and Tag Templates

The Participants’ tag templates reflect the transmission mapping for the delivery of Assistance Reserve energy between Participating Balancing Authorities. The Northwest Power Pool Corporation has a contract with Open Access Technology International, Inc. (OATI) to produce after-the-fact energy schedule tags for all deliveries of Assistance Reserve energy. These tags are provided to the Participants and the WECC Western Interchange Tool (WIT).

The WPP Staff is responsible for assisting with the maintenance of these tag templates used by OATI, and keeping them up-to-date in accordance with requests made by Participating Balancing Authorities. Attachment F describes the WPP Reserve Sharing Group’s procedures for revising the transmission mapping as reflected in the tag templates.



The Participants' tag templates are not publicly available and are only accessible to the RSG Representatives, their designated RSG Alternate Representatives and tagging personnel. The designated representatives may access and download the most current version of *WPP RSG Tagging Templates.xls* on the Western Power Pool website (www.westernpowerpool.org) in the Reserve Sharing Group's Documents.

K.2. Financial Settlement

The WPP Reserve Sharing Group utilizes the Intercontinental Exchange (ICE) day-ahead peak and off-peak index prices at the Mid-Columbia (Mid-C) and Palo Verde (PV) trading hubs, for the calculation of the settlement price as noted in subsection (a.) below.

A Participant will be financially reimbursed for providing Assistance Reserve energy.

For purposes of the WPP Reserve Sharing Program, the "Settlement Price" for peak hours will be the average of the ICE day-ahead peak index prices for the Mid-C and PV trading hubs. The "Settlement Price" for off-peak hours will be the average of the ICE day-ahead off-peak index prices for the Mid-C and PV trading hubs, *provided, however*, that (a) if ICE does not publish a Day-Ahead Price for a relevant operating day or Request Hour, then the Settlement Price shall be the average of the other Day-Head Price for the Request Hour and (b) in no event will the Settlement Price (\$/MWh) be less than zero.

Examples of settlement for 10 MWh of dispatched energy:

Example 1:

Index prices: Mid-C \$50, PV \$75

Calculation: $(\$50 + \$75) / 2 = \$62.50$ settlement price x 10MWh = \$625

Example 2:

Index prices: Mid-C \$50, PV-No Trade.

Calculation: $\$50 + (\text{excluded}) = \50 settlement price x 10MWh = \$500

Example 3:

Index prices: Mid-C \$-20 (below zero), PV \$5,

Calculation: $(\$0 + \$5) / 2 = \$2.50$ Settlement Price x 10MWh = \$25

With respect to FERC-jurisdictional entities, the Settlement Price will be set forth in the Participant's individual tariff on file with and approved by FERC. In the event that the Settlement Price as set forth is amended, such amended Settlement Price will not be effective until all FERC-jurisdictional entities have approved amended tariffs.



During the RSG Committee's third quarter meeting the RSG Committee (or a work group or task force appointed by the RSG Committee) will review the definition of "Settlement Price," to ensure the selected trading hubs and applicable day-ahead peak and off-peak index price continue to represent a fair value of energy within the WPP Reserve Sharing Group footprint. The RSG Committee may elect to either maintain the current definition of "Settlement Price" or propose a modified definition to be considered for approval at the next meeting of the RSG Committee. The effective date of any modification to the definition of "Settlement Price" will be coordinated to allow Participants with applicable tariffs filed with FERC to make any necessary filings with FERC.

Unless the affected Participants have agreed otherwise, financial settlements will occur under the responding Participant's normal monthly billing cycle.

WPP Staff will be responsible for determining and posting Settlement Prices, calculated as described in this Section K.2, in accordance with the following procedures:

- a. WPP Staff will use the day-ahead peak and off-peak prices posted by ICE at the end of each trading day to programmatically calculate and post the Settlement Price for all hours of the days for which prices were published (operating days).
- b. In the first three (U.S.) business days following the first (U.S.) business day of each month (referred to in these procedures as the "lock down date"), WPP Staff may confer with designated Participants for assistance in validating the applicable prices posted by ICE for the preceding month and the computation of the Settlement Prices as necessary.
- c. By the end of the third (U.S.) business day following the lock-down date, WPP Staff will post finalized Settlement Prices for all hours of the preceding month, computed as described in this subsection (e).
- d. If, as of the lock-down date, information needed to compute one or more Settlement Prices has not yet been posted by ICE, WPP Staff will compute and post Settlement Prices for those applicable dates and hours within three (U.S.) business days following the date on which the necessary information is first posted by ICE.
- e. Settlement Prices that have been posted by WPP Staff in accordance with the procedures set forth above will not be subject to further adjustment, except by agreement of all affected Participants.

L. INTERNAL WPP RESERVE SHARING GROUP REPORTING



L.1 Obligation to Submit a WPP RSG Verification Form

A Participant must, within two (U.S.) business days following the triggering event, prepare and submit to the WPP Staff a completed WPP RSG Verification Form whenever any one of four conditions described below occurs:

- a. The Participant makes a Reserve Sharing Request under the WPP Reserve Sharing Program (including use of backup procedures specified in Section N if the automated process fails).
- b. The Participant or the WPP Reserve Sharing Group has experienced a Qualifying Event that is a Reportable Balancing Contingency Event (equal to or greater than the lesser of (i) 500 MW, or (ii) 80% of the Most Severe Single Contingency) for the WPP Reserve Sharing Group at the time of the Qualifying Event.
- c. The WPP Staff contacts the Participant requesting a WPP RSG Verification Form because the Participant has ownership or contractual rights in a jointly owned facility and the WPP Staff is following up with the Participant as described in Section L.2.
- d. The Participant has experienced a Reliability Coordinator declared Energy Emergency Alert (as described in NERC Standard EOP-011 or successor standard).

WPP RSG Verification Forms are available on the WPP Website. The Participants will transmit completed forms via e-mail to WPPRSG@westernpowerpool.org. The Western Power Pool Corporation, in its capacity as agent for the WPP Reserve Sharing Group, may request additional data and information as may be required and is responsible for submitting periodic reports to the WECC and NERC in accordance with their requirements.

L.2 Reporting Balancing Authority Obligation to Notify WPP Staff

A Participant that is the Reporting/Operating Balancing Authority (as specified in Attachment K) for a jointly owned facility must, as soon as feasible, but in any case within two (U.S.) business days following the triggering event, provide written notice to the WPP Staff (which may be by electronic mail) whenever the jointly owned facility for which it is the Reporting/Operating Balancing Authority has experienced a Qualifying Event that is a Reportable Balancing Contingency Event (equal to or greater than the lesser of (a) 500 MW, or (b) 80% of the Most Severe Single Contingency) for the WPP Reserve Sharing Group at the time of the Qualifying Event.

The WPP Staff will promptly follow up with all other Participants that have ownership or contractual rights in the jointly owned facility to request that those Participants submit completed WPP RSG Verification Forms.

M. RESERVE SHARING ZONES



The WPP Reserve Sharing Program takes into account the effect constrained transmission facilities can have on the ability of Participants to deliver Assistance Reserve energy to one another. When a Participating Balancing Authority (or a group of Participating Balancing Authorities) is separated from remaining Participants by constrained transmission facilities, the effect of the constraint is reflected in the establishment of Reserve Sharing Zones. Attachment C to this document identifies the Reserve Sharing Zones for the WPP Reserve Sharing Program, together with the sequence (levels) through which Assistance Reserve is deployed for each Reserve Sharing Zone.

The Long-Term Zonal MSSC Limits account for limitations, as determined by the Participant Balancing Authority(ies) of each zone as identified in Attachment K.1.

Proposed system changes that will result in an increase to a Long-Term Zonal MSSC as identified in Attachment K, must be approved by the Balancing Authorities of the impacted zone within 120 days of system change being identified.

In addition, any proposed change to the WPP Reserve Sharing Group Long-Term MSSC Limit as identified in Attachment K, must be approved by the WPP Reserve Sharing Group Committee.

N. BACKUP PROCEDURES

Reserve Sharing Requests and delivery of Assistance Reserve energy are normally implemented through the Reserve Sharing Computer System. When a Participant cannot access the Reserve Sharing Computer System (or the system is inoperable), the Participant should use the manual backup procedures as reflected in Attachment D's respective process chart and described in Attachment E and to make any Reserve Sharing Requests. In these circumstances, a responding Participant is obligated to provide Assistance Reserve only up to the amount of its available transmission capacity or its Contingency Reserve Obligation, whichever is smaller. The settlement process for delivery of Assistance Reserve energy using the backup procedure is the same as for the automated reserve sharing process, except that requesting and responding Participants must agree (on a case-by-case basis) to any reserve sharing transactions instead of obtaining the information from the Reserve Sharing Computer System. This process must be in accordance with Attachment G for production of after-the-fact tags and in accordance with existing reliability standards and regional business practices.

O. PROCEDURES FOR ADDRESSING ISSUES AFFECTING RESERVE SHARING PROGRAM WHEN AGENCY AGREEMENT PROCESS IS INSUFFICIENT



To facilitate reporting and compliance activities related to NERC or WECC reliability standards that may affect the WPP Reserve Sharing Program, the Participating Balancing Authorities have entered into the Agency Agreement. All Participating Balancing Authorities, as well as the Northwest Power Pool Corporation, are parties to the Agency Agreement. The Agency Agreement contains provisions that enable Participating Balancing Authorities to call meetings on specified prior notice and make decisions about matters concerning the Agency Agreement or the WPP Reserve Sharing Program. Any meeting or vote under the Agency Agreement requires at least 10 days' prior notice.

If an urgent matter related to WPP Reserve Sharing Program arises, and the WPP Staff determines in good faith that either (1) there is insufficient time to address the matter through the procedures in the Agency Agreement or (2) the matter is outside the scope of the Agency Agreement, the WPP Staff will:

- make commercially reasonable efforts to promptly deliver electronic notice of the matter to each designated contact for notice under the Agency Agreement;
- convene a meeting by telephone conference (with the option of in-person attendance at the offices of the Western Power Pool headquarters if feasible) of all available Participating Balancing Authorities, giving as much advance notice and facilitating attendance of as many Participating Balancing Authorities as feasible in view of any need for prompt action;
- seek input from the Participating Balancing Authorities as to what action should be taken, and, if appropriate in the judgment of the WPP Staff or requested by any Participating Balancing Authority, take a vote of the Participating Balancing Authorities (on the basis that a vote of not less than two-thirds of the Participating Balancing Authorities present at the time the vote is taken will be necessary to approve an action or decision); and
- make commercially reasonable efforts to take follow-up action consistent with the input received or results of any vote taken in accordance with this Section O.

No vote of the Participating Balancing Authorities conducted in accordance with this Section O may have the effect of (a) amending this WPP Reserve Sharing Program documentation, (b) amending the Agency Agreement, (c) authorizing settlement of any NERC or WECC compliance-related matter that will or could cause any party to incur violation(s), monetary penalties or other legal liability (unless the party or parties incurring violation(s), monetary penalties or legal liability have given their prior written consent); or (d) restricting the ability of any party to independently exercise whatever legal or procedural rights it may have to challenge action taken by or petition an Enforcement Authority (as that term is defined in the Agency Agreement) in connection with any NERC or WECC compliance-related matter.



P. PENALTIES FOR NON-PERFORMANCE

P.1 Grading

Events will be assessed shortly after they occur to provide feedback to the involved BAAs. Official grading for events will occur once that entity reaches the evaluation threshold. An entity may fail per the defined performance metrics and receive a score greater than 0%.

The evaluation threshold is any calendar quarter that the BAA participated in ten or more events. If an entity participates in fewer than ten events in any calendar quarter, that quarter will be considered a null quarter, and the events roll over to the next calendar quarter. Once ten events are accumulated, those events and any others during that quarter, will be evaluated and scored.

Each Assistance Reserve request and response will be evaluated and scored as follows:

For a Participant requesting Assistance Reserve:

- 50% for initial ACE Recovery in the first fifteen-minute period after the disturbance, plus
- 10% for each clock-minute average period sustained above Recovery Reporting ACE Target minus 25% of their individual BAA's L10 value (as published by NERC) in the first nineteen clock-minutes after the disturbance with a maximum of 50% for five or more sustained clock-minutes.
- With a total maximum score of 100%

If the request is not made within the required 4-minute period after the start of the Qualifying Event, the score will then be reduced by 10% for each minute (or portion thereof) beyond the 4-minute period the request is delayed. The minimum score a BAA may have is 0%.

For a Participant providing Assistance Reserve:

- 50% for initial ACE recovery in the first ten-minute period after the request for Assistance Reserve, plus
- 10% for each clock-minute average period sustained above Recovery Reporting ACE Target minus 25% of the individual BAA's L₁₀ value (as published by NERC) in the first fifteen clock-minutes after the request for Assistance Reserve with a maximum of 50% for five or more sustained clock-minutes.
- With a total maximum score of 100%

All events for the quarter will be individually scored and averaged together and rounded to the nearest 0.1%, to provide a total score for the quarter. If a BAA receives a score of less than 95%,



they will be determined to have failed the quarter. These scores will be reported to the RSG Committee at each meeting. If the BAA does not have any events for a quarter, that quarter will be considered a null quarter and not count as a “Pass” or a “Fail”.

P.2 Edge Case Events Review and Final Determination

All RSG events will be reviewed by WPP Staff. Events that are found to have characteristics making them more difficult to respond to (ex. requests where the value is changing during the analysis period or coming in and out) will be flagged for further review. Any of these events where it is later determined that there is no impact to any member’s quarterly grade (Pass/Fail) will be removed from the overall calculation. Any events with an impact will be brought to the Reserve Sharing Group Committee for final determination.

If a BAA believes that an event should be removed from consideration, they may present their case to the RSG Committee during a committee meeting. The committee will then make a determination and the quarterly score will be recalculated as necessary.

P.3 Penalties

Penalties will be assessed based on how many quarters a BAA has failed. All BAA’s begin at Level 0 and increase one level from their current level with a failed quarter (ex. Q1). Penalties will be analyzed in the following quarter (ex. Q2) and any level changes implemented at 0600 pacific prevailing time the first NERC scheduling day of the quarter after that (ex. Q3). For example: Q1 will be analyzed in Q2 and any level changes implemented in Q3. Decreasing levels and null quarters are addressed in section P.4.

The penalty levels are:

Level 1:

- An official letter to the Participant RSG Representative(s) notifying them of the failed quarter
- The Participant RSG Representative(s) will present a Corrective Action Plan with milestones and completion dates to the RSG Committee
- The Participant RSG Representative(s) will designate a Company Executive to be notified if Level 2 is reached

Level 2:

- An official letter to the designated Company Executive notifying them of the failed quarter
- The Participant RSG Representative(s) will present a Corrective Action Plan with milestones and completion dates to the RSG Committee



Level 3:

- An official letter to the designated Company Executive notifying them of the failure and that their BAA will be required to carry additional Contingency Reserves with an additional failed quarter
- The Participant RSG Representative(s) will present a Corrective Action Plan with milestones and completion dates to the RSG Committee

Level 4:

- An official letter to the designated Company Executive notifying them of the failure and that their BAA is now required to carry additional Contingency Reserves
- The BAA will be required to carry additional reserves and be limited on the events that qualify for requesting Assistance Reserves the for one Quarter.
 - The BAA will be obligated to carry the lesser of their MSSC or 150% of their regularly calculated CRO
 - The BAA will be allowed to call on Assistance Reserve only if they experience a loss greater than their increased obligation
 - During this quarter, the BAA must still respond to requests for Assistance Reserves
 - The BAA must update their EMS or other impacted IT/OT applications to reflect these changes
 - Meet all financial obligations associated with RSG membership
- The Participant RSG Representative(s) will present a Corrective Action Plan with milestones and completion dates to the RSG Committee
- While in this level, an additional failed quarter will result in that BAA(s) triggering a vote to be removed from WPP Reserve Sharing Group by the membership.

Level 0:

- An official letter to the Participant RSG Representative(s) notifying them of the return to Level 0 Operations
- Normal Operations – no restrictions

P.4 Reset

Each quarter a BAA passes will reduce the penalty level under which they are operating. A “null quarter” will keep the BAA at the level they were at for the previous quarter unless the BAA was at Level 4 in which case the BAA would go to Level 3 until they have passed two consecutive quarters excluding null quarters.



ATTACHMENTS

Attachment A – Calculation of Contingency Reserve Obligations; Requirements Related to Operating Reserve - Supplemental

Attachment B – Qualifying Events

Attachment C – Reserve Sharing Zones and Levels

Attachment D – WPP Process Charts

Attachment E – Backup Procedures for WPP Reserve Sharing Program

Attachment F – Reserve Tagging Change Process

Attachment G – Backup Process for After-the-Fact Reserve Sharing Tags

Attachment H – Balancing Authority Areas of Participating Balancing Authorities

Attachment I – *Reserved for Future Use*

Attachment J – *Reserved for Future Use*

Attachment K – MSSC and Long-Term Zonal MSSC Limit, Jointly Owned Dynamic Generation Resources, and Multi Use Transformer(s) Tables

Attachment L – Cut Planes and Cut Plane Monitors Between Reserve Sharing Zones

Attachment M – Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to WPP Reserve Sharing Group Reporting ACE

Attachment N – Correlation Table of Participants, Reliability Coordinators, and Zones



Attachment A

Calculation of Contingency Reserve Obligations; Requirements Related to Operating Reserve - Supplemental

1. Calculation of Participating Balancing Authority Contingency Reserve Obligation

The NWPP Reserve Sharing Group has determined that the Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), as well as the Contingency Reserve Obligation for the WPP Reserve Sharing Group as a whole, will be calculated as set forth below. The measure of the Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), as well as the Contingency Reserve Obligation for the WPP Reserve Sharing Group as a whole, will be based on historical and real-time measurements of load and generation, which will in turn be used to calculate a base Contingency Reserve Obligation for each Participant, plus any real-time adjustments. The Reserve Sharing Computer System completes the calculations necessary for this process (with updated real-time measurements) every data scan cycle (that is, no less frequently than every six seconds). See Attachment D's process chart for Calculation of CRO for more information.

For compliance purposes, these CROs will be used to calculate integrated hourly averages. These integrated hourly averages will be compared to hourly averages of Contingency Reserve Available (also based on real-time measurements) to determine whether the WPP Reserve Sharing Group's Contingency Reserve Available was sufficient to meet the requirements of BAL-002. The amount of Contingency Reserve Available within the WPP Reserve Sharing Group for each clock hour must be equal to or greater than the WPP Reserve Sharing Group's Contingency Reserve Obligation during that same clock hour.

These calculation processes can be summarized as follows:

For each Participant's Balancing Authority Area (BAA), the prior year's averaged Net Generation and averaged Net Load for that BAA will be compared against the prior year's averaged total Generation and total Load of the Reserve Sharing Group and used as a multiplier against the doubled prior year's averaged MSSC. This will be the respective Participant's base Contingency Reserve Obligation and input into the Reserve Sharing Program as calculated and during the first quarter of each year.

The Reserve Sharing Computer System sums all Participants' base Contingency Reserves to see whether this calculated sum is at least equal to the Most Severe Single Contingency for the WPP Reserve Sharing Group. If it is not, the Reserve Sharing Computer System allocates, on a pro rata basis, a real-time adjustment for the additional amount of Contingency Reserve necessary to cover the WPP Reserve Sharing Group's Most Severe Single Contingency.



Next, the Program calculates the amount of any additional Contingency Reserve that may be needed in a Reserve Sharing Zone to cover the Most Severe Single Contingency within that Reserve Sharing Zone and determines the Total Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), reflecting both applicable adjustments for the WPP Reserve Sharing Group's Most Severe Single Contingency and any adjustments necessary to address the Most Severe Single Contingency within a Reserve Sharing Zone.

The third step checks to make sure the aggregate amount of Contingency Reserve Available within the WPP Reserve Sharing Group is at least equal to Contingency Reserve Obligation of the WPP Reserve Sharing Group according to the requirements of BAL-002. If it is not, the Reserve Sharing Computer System allocates, on a pro-rata basis, the additional amount of Contingency Reserve necessary to fully comply with the Contingency Reserve requirements of BAL-002. Each Participating Balancing Authority must add this adjustment amount to its total Contingency Reserve Obligations and stand ready to deploy this adjusted Contingency Reserve Obligation (excluding amounts already deployed to respond to Qualifying Events) at all times for use as Internal Reserve and Assistance Reserve.

Section 4 of this Attachment sets out the process a Participating Balancing Authority should follow to determine its Contingency Reserve Obligation(s) when communication links between the Participating Balancing Authority and the Reserve Sharing Computer System are down, or when the Reserve Sharing Computer System is unavailable.

Set forth below are explanations and formulas for each step in the process to determine the total amount of Contingency Reserve a Participating Balancing Authority is required to carry.³ For any Participant that has more than one Balancing Authority Area within the Western Power Pool, the calculations below are done separately for each of its Balancing Authority Areas.

a. Step One – Calculation of Participating Balancing Authority Base Contingency Reserve Obligation:

The base Contingency Reserve Obligation for each Participant's Balancing Authority Area(s), or "CRO_{CA}" (before the adjustments described in the remainder of Section 1 of this Attachment A), is based on the below process utilizing a BAA's prior calendar year's averaged Net Generation and averaged Net Load compared to the Reserve Sharing Group's Total Generation and Total Load, set as a ratio against two times the Reserve Sharing Group's prior year's averaged Most Severe Single Contingency.

³ For consistency with formulas used in the Reserve Sharing Computer System, individual Participating Balancing Authority obligations are designated by the subscript "CA." This is because the formulas in the Reserve Sharing Computer System were established when the function roughly corresponding to a Balancing Authority was referred to as a control area.



$CRO_{CA} =$

$$\text{Guard MSSC}(\text{Generation} + \text{Load}) / (\Sigma \text{RSG Gen} + \Sigma \text{RSG Load})$$

Where,

- **CRO_{CA}** = base Contingency Reserve Obligation
- **Guard MSSC** is two times the prior calendar year's averaged Reserve Sharing Group's MSSC.
- **Generation** = BAA Net Generation - Designated Dynamically Scheduled Exports + Designated Dynamically Scheduled Imports; averaged for the prior calendar year [see Note 1]
- **Load** = BAA Net Generation - Actual Net Interchange; averaged for the prior calendar year [see Notes 2 and 3]
- **BAA Net Generation** = the sum of Net Generation for all generating units (whether measured by individual units or at the plant level or both) inside the Balancing Authority Area
- **Net Generation** (whether for an individual generating unit or a generating plant) = the greater of (a) the gross metered generation minus station service load, or (b) zero
- **Actual Net Interchange (NI_A)** has the meaning given to this term in the NERC Glossary
- **Scheduled Net Interchange (NI_S)** has the meaning given to this term in the NERC Glossary
- **Designated Dynamically Scheduled Exports** = all Dynamically Scheduled exports for which the sink (receiving) Balancing Authority has agreed to carry Contingency Reserve, as reflected in the Balancing Authority Area's Scheduled Net Interchange value [see Note 4]
- **Designated Dynamically Scheduled Imports** for which the sink (receiving) Balancing Authority has agreed to carry Contingency Reserve, as reflected in the Balancing Authority Area's Scheduled Net Interchange value [see Note 4]
- **Dynamically Scheduled** corresponds to the term "Dynamic Schedule," as defined in the NERC Glossary
- **Σ RSG Gen** = The total Generation for all Participants in the Reserve Sharing Group, averaged over the prior calendar year.

- **Σ RSG Load** = The total Load for all Participants in the Reserve Sharing Group, averaged over the prior calendar year.

Note 1: All generation within the Balancing Authority Area's or the WPP Reserve Sharing Group's metered boundaries should be included in this calculation. Generation within a Balancing Authority Area by Pseudo-Tie (as defined in the NERC Glossary) is considered within the metered boundaries of the Balancing Authority Area into which it is Pseudo-Tied and is included in its generation calculation.

Note 2: Generation within a Balancing Authority Area by Pseudo-Tie is reflected in Actual Net Interchange in the ACE equation.

Note 3: Load within a Balancing Authority Area by Pseudo-Tie is reflected in Actual Net Interchange in the ACE equation. Load within a Balancing Authority Area by Pseudo-Tie is considered within the metered boundaries of the Balancing Authority Area into which it is Pseudo-Tied and is included in its load calculation by virtue of its inclusion in the Actual Net Interchange equation.

Note 4: This term captures net generation responsibility transferred, reflecting that Dynamically Scheduled generation exports can be subtracted from the exporting Balancing Authority's generation obligation (except when the source Balancing Authority and sink Balancing Authority have agreed otherwise), and Dynamically Scheduled generation imports should be added to the importing Balancing Authority's generation obligation (except when the source Balancing Authority and sink Balancing Authority have agreed otherwise).

b. Step Two – Check for Deficiency Related to Most Severe Single Contingency for the WPP:

Once the Participating Balancing Authorities' base Contingency Reserve Obligations have been calculated, the second step in the process is to check for any potential deficiency, should the Most Severe Single Contingency for the WPP exceed the sum of the Participating Balancing Authorities' Contingency Reserve Obligations as calculated in step one, then the ("shortfall" is allocated among the Participating Balancing Authorities in proportion to their relative shares of the WPP Reserve Sharing Group's base Contingency Reserve Obligation, as calculated in step one. This results in an upward adjustment to the base Contingency Reserve Obligation for each Participant's Balancing Authority Area(s).

The formulas for this step are as follows:

If $\Sigma CRO_{CA} < MSSC_{WPP}$, then

$$CRO_SHORT_{WPP} = MSSC_{WPP} - \Sigma CRO_{CA}$$



and

$$\text{AdjCRO_MSSC}_{CA} = \text{CRO_SHORT}_{WPP} * \text{CRO}_{CA} / \sum \text{CRO}_{CA}$$

Where,

$\sum \text{CRO}_{CA}$ = sum of all Participating Balancing Authorities' base Contingency Reserve Obligations, as calculated through step one;

MSSC_{WPP} = the Most Severe Single Contingency for the WPP Reserve Sharing Group, determined in accordance with the Typical Planning MSSC in real time table set forth in Attachment K;

CRO_SHORT_{WPP} = the amount by which the Most Severe Single Contingency for the WPP exceeds the sum of the Participating Balancing Authorities' base Contingency Reserve Obligations;

CRO_{CA} = the Participating Balancing Authority's base Contingency Reserve Obligation as calculated in step one;

AdjCRO_MSSC_{CA} = the adjustment to the Participating Balancing Authority's base Contingency Reserve Obligation to reflect the Most Severe Single Contingency for the WPP Reserve Sharing Group.

MSSC_{WPP} is revised whenever the output of the generator (or loading of the transmission line) that sets the MSSC_{WPP} increases or decreases by one MW or more.



c. Step Three – Check for Deficiency Related to Most Severe Single Contingency for a Reserve Sharing Zone and Sum of Adjustments:

The third step in the process is to check for any potential deficiency within a Reserve Sharing Zone if the Zone's Most Severe Single Contingency exceeds the sum of (i) the Contingency Reserve Obligation for the Zone's Participating Balancing Authorities and (ii) the amount of Contingency Reserve that can be imported from adjacent Reserve Sharing Zones. This Zone adjustment is then summed with the adjustment from step two and added to the Participant's base Contingency Reserve Obligation to give Total Contingency Reserve Obligation.

The Reserve Sharing Computer System continuously monitors transfer limits ($LIMIT_{Pathnn}$), actual flows ($ACTUAL_{Pathnn}$), and, where applicable, scheduled flows ($SCHED_{Pathnn}$) on transmission facilities connecting Reserve Sharing Zones.

If, after accounting for Contingency Reserve Obligation that can be delivered from adjacent Reserve Sharing Zones, the combined Contingency Reserve Obligations within the Zone is less than the Zone's Most Severe Single Contingency, this shortfall is allocated among the Zone's Participating Balancing Authorities in proportion to their relative shares of the aggregate Contingency Reserve Obligations (as calculated through steps one and two) for the Reserve Sharing Zone.

The formulas for adjusting Contingency Reserve Obligations, if necessary, for the Most Severe Single Contingency for a Reserve Sharing Zone are as follows:

If $\sum (CRO_{CA} + AdjCRO_MSSC_{CA}) + ASDEL_{ZONE} < MSSC_{ZONE}$, then

$$CRO_SHORT_{ZONE} = MSSC_{ZONE} - (\sum (CRO_{CA} + AdjCRO_MSSC_{CA}) + ASDEL_{ZONE})$$

and

$$AdjCRO_ZONE_MSSC_{CA} = CRO_SHORT_{ZONE} * (CRO_{CA} + AdjCRO_MSSC_{CA}) / \sum (CRO_{CA} + AdjCRO_MSSC_{CA})$$

and

$$AdjCRO_{CA} = AdjCRO_MSSC_{CA} + AdjCRO_ZONE_MSSC_{CA}$$

and

$$TotCRO_{CA} = CRO_{CA} + AdjCRO_{CA}$$



Where,

$\Sigma \text{CRO_MSSC}_{CA}$ = the sum of Contingency Reserve Obligations for all Participating Balancing Authorities in the Reserve Sharing Zone (as calculated through steps one and two);

CRO_MSSC_{CA} = the Contingency Reserve Obligation for a Participating Balancing Authority in the Reserve Sharing Zone, as adjusted to reflect the Most Severe Single Contingency for the WPP Reserve Sharing Group;

$\text{ASDEL}_{\text{ZONE}}$ = the amount of Assistance Reserve that can be delivered to the Reserve Sharing Zone from adjacent Reserve Sharing Zones, after accounting for relevant transfer limits, actual flows, and if applicable, scheduled flows on transmission facilities connecting Reserve Sharing Zones;

$\text{MSSC}_{\text{ZONE}}$ = the Most Severe Single Contingency for the Reserve Sharing Zone;

$\text{CRO_SHORT}_{\text{ZONE}}$ = the amount by which the Most Severe Single Contingency for the Reserve Sharing Zone exceeds the sum of (i) the aggregate Contingency Reserve Available of the Participating Balancing Authorities in the Reserve Sharing Zone ($\Sigma \text{CRO_MSSC}_{\text{ZONE}}$), plus (ii) amount of Assistance Reserve that can be delivered to the Reserve Sharing Zone from adjacent Reserve Sharing Zones ($\text{ASDEL}_{\text{Lim}}$);

CRO_{CA} = the Participating Balancing Authority's Contingency Reserve Obligation;

$\text{AdjCRO_ZONE_MSSC}_{CA}$ = the additional amount of Contingency Reserve a Participating Balancing Authority needs to carry to reflect the Most Severe Single Contingency for the Reserve Sharing Zone;

AdjCRO_MSSC_{CA} = the adjustment to the Participating Balancing Authority's base Contingency Reserve Obligation to

reflect the Most Severe Single Contingency for the WPP Reserve Sharing Group;

$AdjCRO_{CA}$ = the total adjustment amounts to be added to a Participant's base Contingency Reserve Obligation to reflect any applicable adjustments for the WPP Reserve Sharing Group's Most Severe Single Contingency and the Most Severe Single Contingency for a Reserve Sharing Zone; and

$TotCRO_{CA}$ = the Participating Balancing Authority's Contingency Reserve Obligation as adjusted to reflect the Most Severe Single Contingency for the WPP Reserve Sharing Group and for its Reserve Sharing Zone.

$MSSC_{ZONE}$ is revised whenever the output of the generator (or loading of the transmission line) that sets the $MSSC_{ZONE}$ increases or decreases by one MW or more.

d. Step Four – Calculation of Aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group and Check for WPP Reserve Sharing Group Shortfall:

The fourth step in the process calculates the aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group and makes sure the total Contingency Reserve Available within the WPP Reserve Sharing Group is at least equal to the aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group.

The aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group is calculated by summing the total Contingency Reserve Obligations (as calculated in steps one through three) for all Participants' Balancing Authority Areas.

The formula for this step is as follows:

$$TotCRO_{WPP} = \sum TotCRO_{CA}$$

Where,

$TotCRO_{WPP}$ = the aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group; and

$\sum TotCRO_{CA}$ = the sum of the total Contingency Reserve Obligations of all Participating Balancing Authorities, as adjusted to reflect

the Most Severe Single Contingency for the WPP Reserve Sharing Group and for applicable Reserve Sharing Zones.

If the Contingency Reserve Available within the WPP Reserve Sharing Group is less than the aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group, the difference between these two figures (the “shortfall”) is allocated among the Participating Balancing Authorities in proportion to their relative shares of the WPP Reserve Sharing Group’s Contingency Reserve Obligation (without factoring in adjustments for shortfalls within a Reserve Sharing Zone). This results in an upward adjustment to the Contingency Reserve Obligation for each Participant’s Balancing Authority Area(s).

The formulas for this final check are as follows:

If $TotAvailCR_{WPP} < TotCRO_{WPP}$, then

$$TotCRO_SHORT_{WPP} = TotCRO_{WPP} - TotAvailCR_{WPP}$$

and

$$AdjCRO_SHORT_{CA} = (TotCRO_SHORT_{WPP} * (CRO_{CA} + AdjCRO_MSSC_{CA}) / \sum (CRO_{CA} + AdjCRO_MSSC_{CA}))$$

Where,

$TotCRO_{WPP}$ = the aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group;

$TotAvailCR_{WPP}$ = the total amount of Contingency Reserve Available in the WPP Reserve Sharing Group;

$TotCRO_SHORT_{WPP}$ = the amount by which the aggregate Contingency Reserve Obligation for the WPP Reserve Sharing Group exceeds the total Contingency Reserve Available;

CRO_{CA} = the Participating Balancing Authority’s base Contingency Reserve Obligation as calculated in steps one;

$AdjCRO_SHORT_{CA}$ = the adjustment to the Participating Balancing Authority’s Contingency Reserve Obligation to



reflect the shortfall in total Contingency Reserve Available; and

$AdjCRO_MSSC_{CA}$ = the adjustment to the Participating Balancing Authority's base Contingency Reserve Obligation to reflect the Most Severe Single Contingency for the WPP Reserve Sharing Group.

Each Participant must add the adjustment amount ($AdjCRO_SHORT_{CA}$) to the total Contingency Reserve Obligation for its Balancing Authority Area(s) as calculated in step three ($TotCRO_{CA}$) and stand ready to deploy the combined amount of Contingency Reserve Available (excluding amounts already deployed to respond to a Qualifying Event) at all times for use as Internal Reserve and Assistance Reserve.

The WPP Reserve Sharing Group will experience a shortfall only if one or more Participants have not fully met their Contingency Reserve Obligations.

2. Permitted Amounts and Types of Operating Reserve - Supplemental

A Participating Balancing Authority's Contingency Reserve Obligation(s) may be met with Operating Reserve - Supplemental, provided that any Operating Reserve - Supplemental applied to a Participating Balancing Authority's Contingency Reserve Obligation can be made fully effective within 10 minutes.

Permitted Sources of Operating Reserve - Supplemental

A Participating Balancing Authority is permitted to use Operating Reserve - Supplemental to meet a portion of its Contingency Reserve Obligation(s) calculated in accordance with Section 1 of this Attachment A, the following may be used as sources of Operating Reserve - Supplemental:

1. Operating Reserve - Spinning,
2. Operating Reserve - Supplemental,
3. Interchange Transactions designated by the Source Balancing Authority as Operating Reserve - Supplemental,
4. Reserve held by other entities by agreement that is deliverable on Firm Transmission Service,



5. A resource, other than generation or load, that can provide energy or reduce energy consumption,
6. Load, including demand response resources, demand-side management resources, direct control load management, interruptible load or interruptible demand, or any other load made available for curtailment by the Participating Balancing Authority or the WPP Reserve Sharing Group via contract or agreement, and
7. All other load, not identified in the foregoing items, once a Reliability Coordinator for the Western Power Pool has declared an energy emergency alert signifying that interruption of Firm Demand is imminent or in progress.

3. Participating Balancing Authority Calculation of Contingency Reserve Obligation(s) When Communications with Reserve Sharing Computer System Are Disrupted

During periods when communication links between a Participating Balancing Authority and the Reserve Sharing Computer System are down, or when the Reserve Sharing Computer System is unavailable, responsibility for calculating Contingency Reserve Obligations shifts to the Participating Balancing Authority. Any Participating Balancing Authority that is unable to access the Reserve Sharing Computer System's calculation of its Contingency Reserve Obligations should use good-faith estimates of the inputs needed to determine its Contingency Reserve Obligation, based on the last available input data known to be valid, and apply as many of the steps described in Section 1 of this Attachment A as it can, consistent with good utility practice. The Participating Balancing Authority should continue this process, adjusting as appropriate for relevant changes to system conditions, until availability of and communications with the Reserve Sharing Computer System are restored.



Attachment B

Qualifying Events

A “Qualifying Event” is any single event described in subsections (A), (B), (C), or (D) below, or any series of such otherwise single events, with each separated from the next by one minute or less. Any capitalized term used below that is not defined within this document has the meaning given to it in the NERC Glossary. This Attachment B may be modified from time to time by action of the RSG Committee.

(A) Sudden Loss of Generation

- a. due to
 - i. unit tripping (*see note 1 below*), or
 - ii. loss of generator Facility resulting in isolation of the generator from the Bulk Electric System or from the responsible entity’s System, or
 - iii. sudden unplanned outage of transmission Facility;
 - b. and, that causes an unexpected change to the responsible entity’s ACE (*see note 2 below*)
-

(B) Sudden Loss of an Import

- a. due to forced outage of transmission equipment that causes an unexpected imbalance between generation and Demand on the Interconnection. (*See note 3 below*).
-

(C) Sudden Restoration of Demand

- a. that was used as a resource that causes an unexpected change to the responsible entity’s ACE
-

(D) Energy Emergency Alert

- a. where a Participating Balancing Authority’s inability to meet Firm Demand such that the Participating Balancing Authority has requested its Reliability Coordinator to declare, and the Reliability Coordinator has declared an Energy Emergency Alert 3 (as described in NERC Standard EOP-011 or a successor standard) the Participant:
 - i. May utilize its CRO to serve Firm Demand while the Participant is in an EEA 3;



- ii. Must keep the RSG Computer System current with any portion of its Contingency Reserve Available already in use (UsedCR_{CA});
- iii. Should reach out to neighboring BA's to verify no energy is available;
- iv. Should reach out to cut-plane monitors for limit verification of any cut-planes with constraints impacting the BA's ability to receive Assistance Reserves;
- v. May request Assistance Reserve through the WPP Reserve Sharing Program for up to 105 minutes to prevent shedding Firm Demand, not to restore their Contingency Reserves.
 - 1. Once the timeframe above has been depleted, then the Participant may continue to utilize its CRO to server Firm Demand. The Participant may need to shed Firm Demand to maintain Reporting ACE until the Participant is no longer in an EEA 3.

Note 1:

For purposes of this Attachment B, the term "unit tripping" means:

- (1) the automatic operation of a device or capability designed to protect a power-producing resource from damage, or
- (2) the unexpected failure of a power-producing resource to maintain, increase, or remain available due to equipment failure, or
- (3) the unexpected failure of a power-producing resource to start (a) due to equipment failure, and (b) not associated with the failure to procure fuel,

which, in all cases, results in loss of MW output serving (or needed to serve) one or more Participants' Demand obligations.

Note 2:

The events described in Note 1 are Qualifying Events even when they do not result in an immediate change to the responsible entity's ACE.

Note 3:

Given typical operating practices followed in the Western Interconnection, the loss of an import would generally be expected to result in a corresponding adjustment to generation.

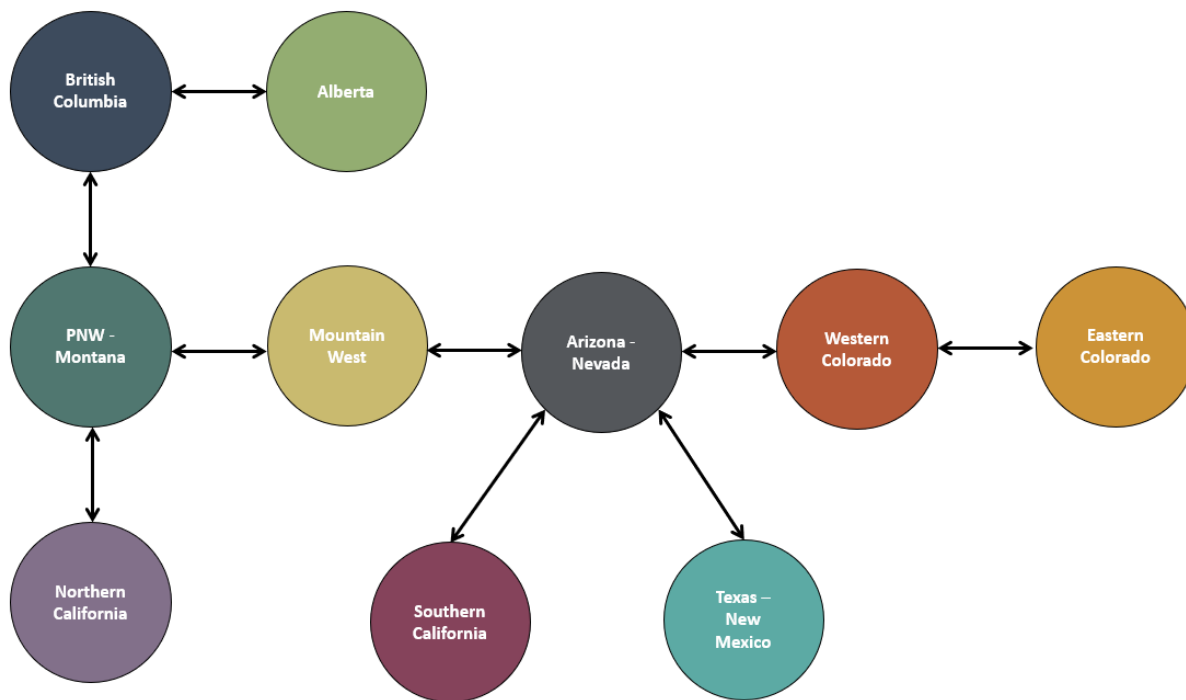


Attachment C

Reserve Sharing Zones and Assistance Reserve Responder Levels

Each Reserve Sharing Zone, as identified in the table below, has one or more Balancing Authority Participants.

Zones	Balancing Authority Participants
Alberta (AB)	AESO
Arizona -Nevada (AZNV)	AZPS, BNBA, DEAA, GRID, SRP, TEPC, WALC & NEVP
British Columbia (BC)	BCHA
Eastern Colorado (ECO)	PSCO
Mountain West (MTWEST)	IPCO & PACE
Northern California (NCAL)	BANC & TID
Pacific Northwest – Montana (PNWMT)	AVA, AVRN, BPA, CHPD, DOPD, GCPD, GRID, GWA, NWMT, PACW, PGE, PSEI, SCL & TPWR
Southern California (SCAL)	IID
Texas – New Mexico (TXNM)	EPE & PNM
Western Colorado (WCO)	SWPW & BHBA





Assistance Reserve Responder Levels

Each Reserve Sharing Zone has multiple levels for providing Assistance Reserve. Level 1 is the list of initial providers. If there is insufficient Assistance Reserve at Level 1 or there are transmission constraints between Reserve Sharing Zones, additional zones will be included by moving out one level at a time until there is sufficient Assistance Reserve or all Participating Balancing Authorities are included.

		Responding Zone									
		AB	AZNV	BC	ECO	MTWEST	NCAL	PNWMT	SCAL	TXNM	WCO
Requesting Zone	AB	-	4	1	6	3	3	2	5	5	5
	AZNV	5	1	4	3	2	4	3	1	1	2
	BC	1	3	-	5	2	2	1	4	4	4
	ECO	6	2	5	-	3	5	4	3	3	1
	MTWEST	3	2	2	4	1	2	1	3	3	3
	NCAL	4	4	3	6	2	1	2	5	5	5
	PNWMT	3	3	2	5	2	2	1	4	4	4
	SCAL	5	1	4	3	2	4	3	-	1	2
	TXNM	5	1	4	3	2	4	3	1	1	2
	WCO	6	2	5	1	3	5	4	3	3	1

Alberta Zone (AB)

Level 1: BC

Level 2: BC + PNWMT

Level 3: BC + PNWMT + MTWEST + NCAL

Level 4: BC + PNWMT + MTWEST + NCAL + AZNV

Level 5: BC + PNWMT + MTWEST + NCAL + AZNV+ SCAL + TXNM + WCO

Level 6: BC + PNWMT + MTWEST + NCAL + AZNV+ SCAL + TXNM + WCO + ECO

Arizona Nevada Zone (AZNV)

Level 1: AZNV + SCAL + TXNM

Level 2: AZNV + SCAL + TXNM + MTWEST + WCO

Level 3: AZNV + SCAL + TXNM + MTWEST + WCO + ECO + PNWMT

Level 4: AZNV + SCAL + TXNM + MTWEST + WCO + ECO + PNWMT + BC + NCAL

Level 5: AZNV + SCAL + TXNM + MTWEST + WCO + ECO + PNWMT + BC + NCAL + AB

British Columbia Zone (BC)

Level 1: AB + PNWMT

Level 2: AB + PNWMT + MTWEST + NCAL

Level 3: AB + PNWMT + MTWEST + NCAL + AZNV

Level 4: AB + PNWMT + MTWEST + NCAL + AZNV + SCAL + TXNM + WCO



Level 5: AB + PNWMT + MTWEST + NCAL + AZNV + SCAL + TXNM + WCO + ECO

Eastern Colorado Zone (ECO)

Level 1: WCO

Level 2: WCO + AZNV

Level 3: WCO + AZNV + MTWEST + SCAL + TXNM

Level 4: WCO + AZNV + MTWEST + SCAL + TXNM + PNWMT

Level 5: WCO + AZNV + MTWEST + SCAL + TXNM + PNWMT + BC

Level 6: WCO + AZNV + MTWEST + SCAL + TXNM + PNWMT + BC + AB

Mountain West Zone (MTWEST)

Level 1: MTWEST + PNWMT

Level 2: MTWEST + PNWMT + AZNV + BC + NCAL

Level 3: MTWEST + PNWMT + AZNV + BC + NCAL + AB + SCAL + TXNM + WCO

Level 4: MTWEST + PNWMT + AZNV + BC + NCAL + AB + SCAL + TXNM + WCO + ECO

Northern California Zone (NCAL)

Level 1: NCAL

Level 2: NCAL + MTWEST + PNWMT

Level 3: NCAL + MTWEST + PNWMT + BC

Level 4: NCAL + MTWEST + PNWMT + BC + AB + AZNV

Level 5: NCAL + MTWEST + PNWMT + BC + AB + AZNV + SCAL + TXNM + WCO

Level 6: NCAL + MTWEST + PNWMT + BC + AB + AZNV + SCAL + TXNM + WCO + ECO

Pacific Northwest-Montana Zone (PNWMT)

Level 1: PNWMT

Level 2: PNWMT + BC + MTWEST+ NCAL

Level 3: PNWMT + BC + MTWEST+ NCAL + AB + AZNV

Level 4: PNWMT + BC + MTWEST+ NCAL + AB + AZNV + SCAL + TXNM + WCO

Level 5: PNWMT + BC + MTWEST+ NCAL + AB + AZNV + SCAL + TXNM + WCO + ECO

Southern California Zone (SAL)

Level 1: AZNV + TXNM

Level 2: AZNV + TXNM+ MTWEST + WCO

Level 3: AZNV + TXNM+ MTWEST + WCO + ECO + PNWMT

Level 4: AZNV + TXNM+ MTWEST + WCO + ECO + PNWMT + BC + NCAL

Level 5: AZNV + TXNM+ MTWEST + WCO + ECO + PNWMT + BC + NCAL + AB

Texas New Mexico Zone (TXNM)

Level 1: AZNV + SCAL + TXNM

Level 2: AZNV + SCAL + TXNM + MTWEST + WCO

Level 3: AZNV + SCAL + TXNM + MTWEST + WCO + ECO + PNWMT

Level 4: AZNV + SCAL + TXNM + MTWEST + WCO + ECO + PNWMT + BC + NCAL

Level 5: AZNV + SCAL + TXNM + MTWEST + WCO + ECO + PNWMT + BC + NCAL + AB



Western Colorado Zone (WCO)

Level 1: WCO + ECO

Level 2: WCO + ECO + AZNV

Level 3: WCO + ECO + AZNV + MTWEST + SCAL + TXNM

Level 4: WCO + ECO + AZNV + MTWEST + SCAL + TXNM + PNWMT

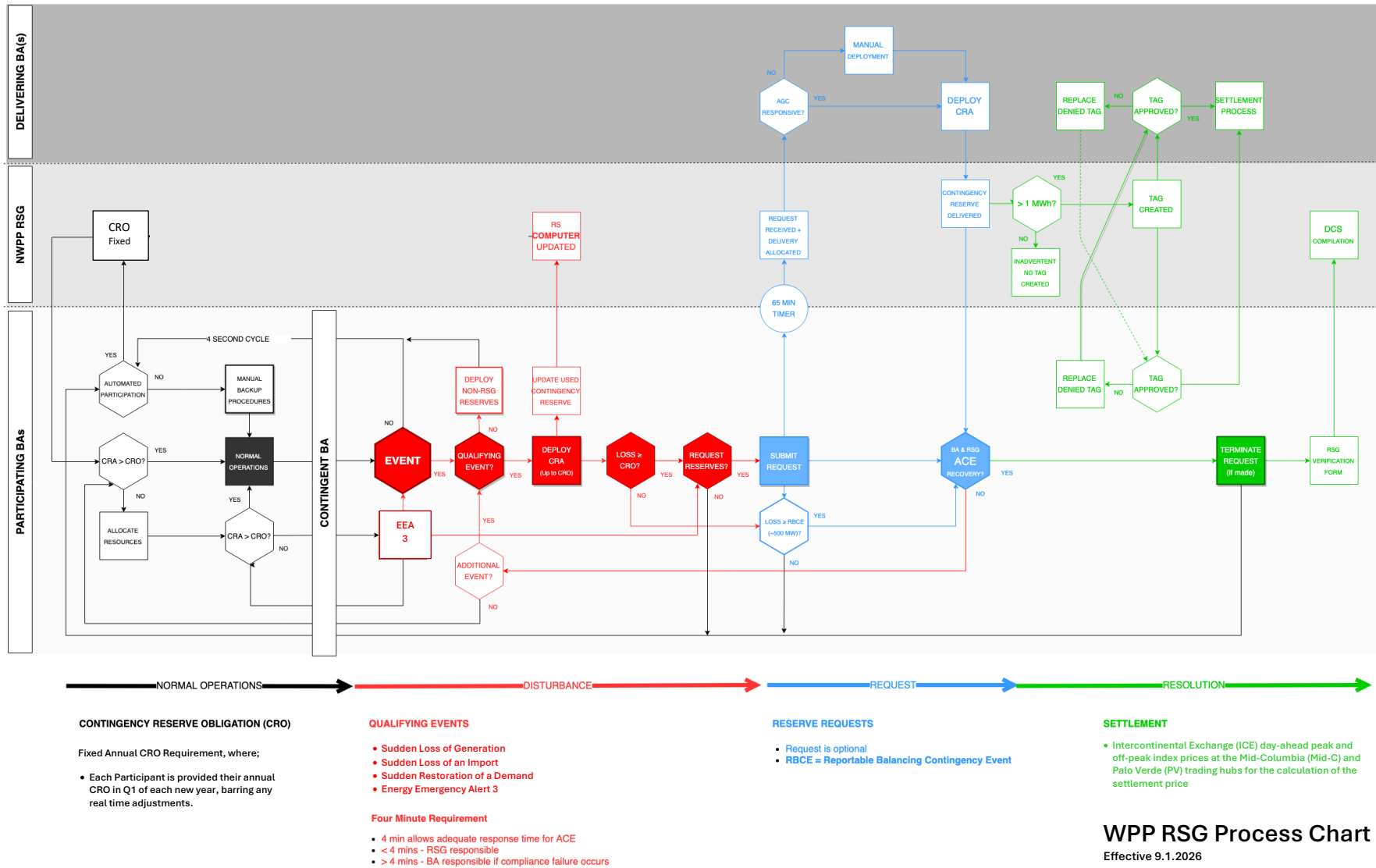
Level 5: WCO + ECO + AZNV + MTWEST + SCAL + TXNM + PNWMT + BC + NCAL

Level 6: WCO + ECO + AZNV + MTWEST + SCAL + TXNM + PNWMT + BC + NCAL + AB



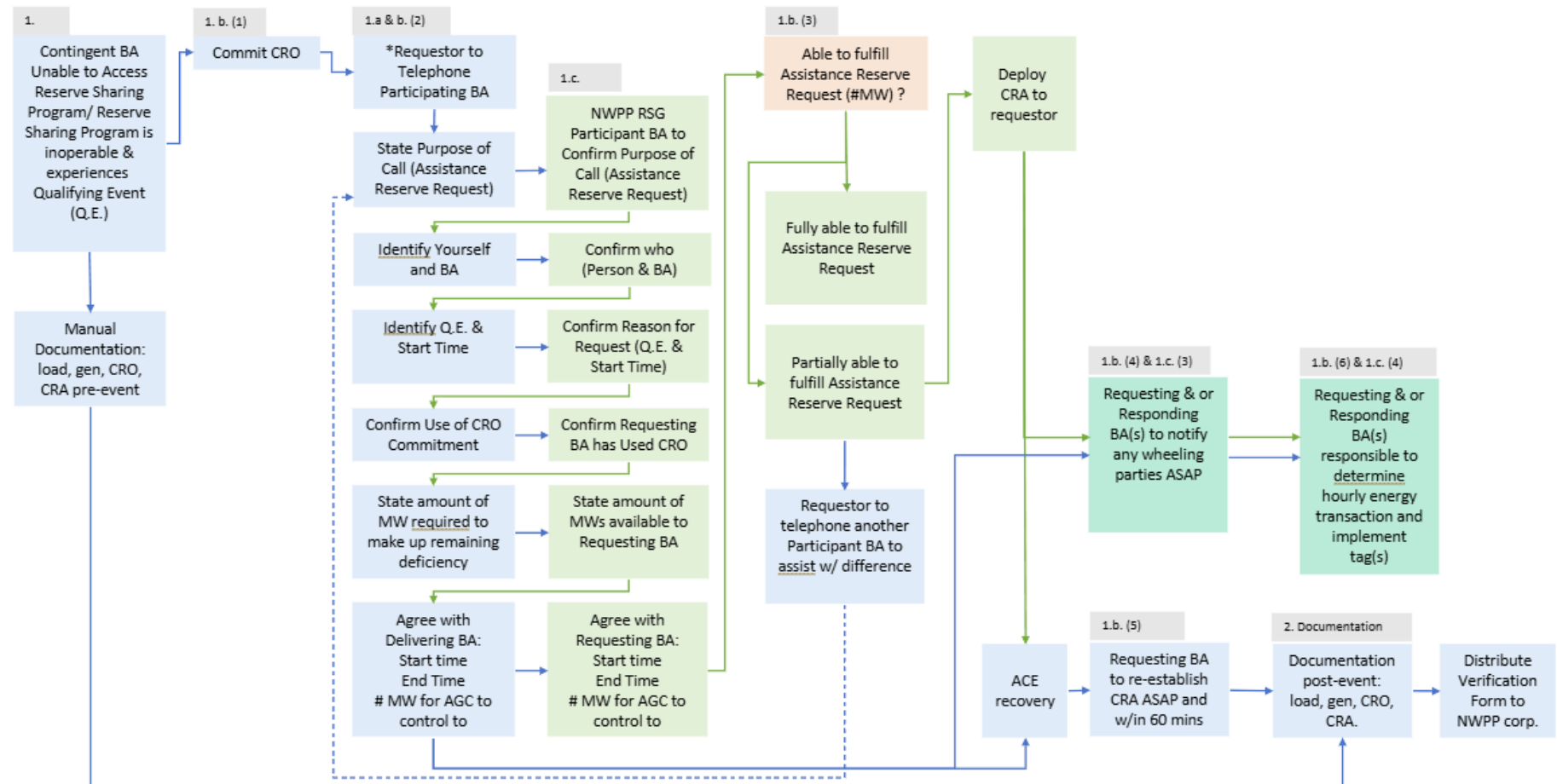
Attachment D

WPP Process Charts





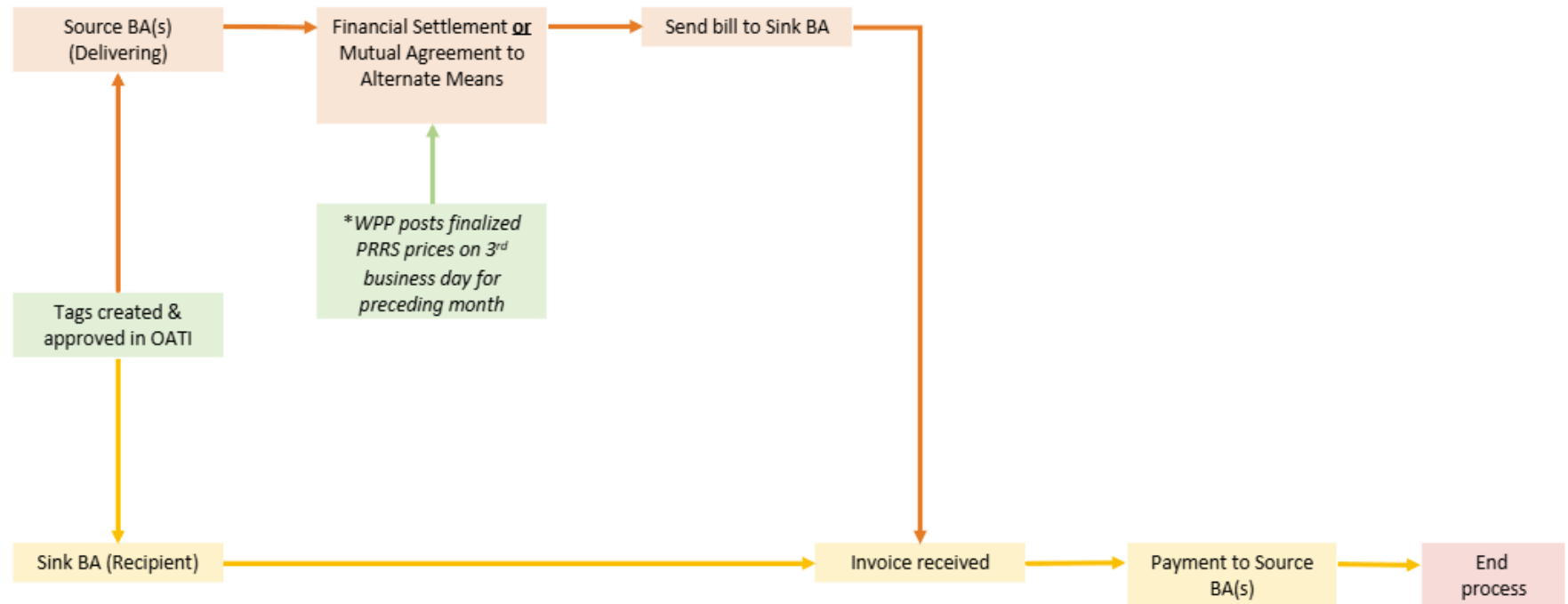
Attachment E – Back-up Procedures For Reserve Sharing Program



* To minimize potential transmission problems call adjacent BA first. If adjacent BA is unable to fulfill Assistance Reserve Request, contingent BA should move and call next adjacent BA. The process would be the same if the adjacent BA is able to partially fill request or unable to fill request.



Section K – Settlement Process



Attachment E

BACKUP PROCEDURES FOR RESERVE SHARING PROGRAM

1. Participant Cannot Access Reserve Sharing Computer System or Reserve Sharing Computer System Is Inoperable

Reserve Sharing Requests and delivery of Assistance Reserve are normally implemented through the Reserve Sharing Computer System. When the Reserve Sharing Computer System is inoperable or inaccessible, a Participant that needs to make a Reserve Sharing Request should contact other Participants by telephone to request Assistance Reserve. Attachment D reflects the respective process described in this attachment. The provisions below (Sections 1.a, 1.b, and 1.c) will apply for the manual backup procedure. The settlement process for delivery of Assistance Reserve using the backup procedure is the same as for the automated reserve sharing process, except that requesting and responding Participants must agree (on a case-by-case basis) to any reserve sharing transactions instead of obtaining the information from the Reserve Sharing Computer System. This process must be in accordance with Attachment G for production of after-the-fact tags and in accordance with existing reliability standards and regional business practices.

a. Transmission Limitations; Adjacent Utilities

To minimize potential transmission problems, whenever possible a Participant that needs to request Assistance Reserve by telephone should contact an adjacent Participant first.

b. Backup Reserve Sharing Procedure – Telephone Requests

Because NERC BAL-002 requires recovery of Reporting ACE within 15 minutes, the number of telephoned assistance requests that a Participant's dispatcher can make is limited. To enhance Participants' ability to meet this standard, Participants may use the following procedure (and Participants may use any economic arrangements under existing contracts by mutual agreement at any point in the following sequence):

- (1) As provided in Section E.2, a Participant must commit its Internal Reserve up to the full amount of its Contingency Reserve Obligation before requesting Assistance Reserve.
- (2) If a Participant that has deployed its Contingency Reserve Obligation and needs additional capacity to meet the 15-minute criterion, that Participant may call another Participant for assistance. The responding Participant will make available its unused Contingency Reserve Available up to its Contingency Reserve Obligation.

The caller must:

- (a) state that the purpose of the call is to make a Reserve Sharing Request,
- (b) identify who is making the request,



- (c) identify the Qualifying Event it has experienced and the start time of the event,
 - (d) confirm that it committed to use Contingency Reserve up to the full amount of its Contingency Reserve Obligation to respond to the event,
 - (e) state the amount of Assistance Reserve that is required to make up the remaining deficiency, and
 - (f) agree with the responding Participant on the amount, start-time, and end-time of the Contingency Reserve delivery to be entered into the AGC controller total. The end-time may be shortened thereafter, if the requesting Participant determines that it does not need Assistance Reserve through the original end-time.
- (3) If the Assistance Reserve made available and delivered from the responding Participant is insufficient to cover the Qualifying Event, the requesting Participant will cover the remaining deficit by requesting Assistance Reserve from another Participant.
- (4) As soon as possible, the requesting Participant must notify any intermediate wheeling Balancing Authority(s) of the scheduled delivery of Assistance Reserve and its duration. Each Participating Balancing Authority that is needed for intermediate wheeling will make transmission capacity available up to its maximum operating limit by any means necessary including the curtailment of interruptible schedules.
- (5) The Participant requesting assistance must re-establish its Contingency Reserve Available that is ready for deployment (to at least the level of its Contingency Reserve Obligation) as soon as possible by adding generation, adjusting interchange schedules, or dropping load. As provided in Section F.3, a Participant that requests Assistance Reserve must relinquish the Assistance Reserve within 105 minutes following the start of the Qualifying Event.
- (6) Any Participant that requests Assistance Reserve must contact the party within its organization that is responsible for energy scheduling and notify that party of the actions taken to request Assistance Reserve. The party responsible for scheduling must then contact its counterpart from the responding Participant to determine an agreed-upon hourly energy transaction and to agree on transaction wheeling amounts in accordance with the paths identified in the Participants pre-defined tag templates.



c. Backup Reserve Sharing Procedure – Telephone Responses

The following responses may be appropriate for a Participant that receives a Reserve Sharing Request by telephone:

- (1) If a Participant that has deployed its Contingency Reserve needs additional capacity to meet the 15-minute criterion, that Participant may call another Participant for assistance.

The responding Participant will make available its unused Contingency Reserve up to its Contingency Reserve Obligation.

- (2) The Participant that is being asked to provide Assistance Reserve may make the following responses:

- (a) confirm that the purpose of the call is to make a Reserve Sharing Request,
- (b) confirm who is making the request,
- (c) confirm the reason for the request (*e.g.*, identify the Qualifying Event and the start time of the event),
- (d) confirm that the requesting Participant has committed to use Contingency Reserve Available up to the full amount of its Contingency Reserve Obligation to respond to the event,
- (e) state the amount of Assistance Reserve available to the requesting Participant,
- (f) agree with the requesting Participant on the amount, start-time, and end-time of the Assistance Reserve to be entered into the AGC controller total.

- (3) As soon as possible, the responding Participant should notify any intermediate wheeling Balancing Authority(s) of the scheduled delivery of Assistance Reserve energy and its duration. Each Participating Balancing Authority that is needed for intermediate wheeling will make transmission capacity available up to its maximum operating limit by any means necessary including the curtailment of interruptible schedules.

- (4) Any Participant that provides Assistance Reserve must contact the party within its organization that is responsible for energy scheduling and notify that party of the actions taken to provide Assistance Reserve. The party responsible for scheduling must then contact its counterpart from the requesting Participant to determine an agreed-upon hourly energy transaction.



2. Documentation

Any Participant that requests Assistance Reserve using the backup procedures in this Attachment E must document its load, generation, Contingency Reserve Obligation, and Contingency Reserve Available immediately before the Qualifying Event. It must document the amount of its capacity lost or other characteristics of the Qualifying Event, the amount and components of Contingency Reserve deployed, and the amount of Assistance Reserve requested and received. The requesting Participant must also comply with Attachment G, Backup Process for After-the Fact Reserve Sharing Tags.

WPP RSG Verification Forms are available on the WPP Website. The requesting Participant must send this documentation to all responding Participants, and to the WPP Staff, on the next working day.

Attachment F

TAG TEMPLATE CHANGE PROCESS

A. Process for Changing Tagging Templates Between WPP Reserve Sharing Participants

1. Any Participant that wishes to request a change to the RSG tag templates, either by modifying existing templates or adding new templates, after making their intentions known to WPP staff, must obtain the agreement of all other Participants that would be affected by the requested change. This is customarily done by providing an updated tag template file to the other Participants and providing test tags for the Participants to review, either in the OATI demo tagging environment, or test tags in the production system.
2. All affected Participants must be given adequate time to make any software changes to relevant systems.
3. Participant(s) requesting the change must complete any necessary registrations (or updates to registrations) related to the NAESB Electric Industry Registry (EIR) and Western Interchange Tool (WIT) Registry, or any successor industry registration systems.
4. Participants must submit requests for changes to the tag templates to WPP Staff in the form of tag template files with the modified/new templates.
5. WPP staff will coordinate with OATI to apply the new templates to the OATI demo tagging environment.
6. WPP staff will perform basic testing and validation. This does not replace thorough examination of the tag templates by the Participants.
7. WPP staff will coordinate with the requesting Participant to determine an implementation date.
8. WPP Staff will advise all Participants of the implementation date for the revised/new templates.
9. WPP Staff will coordinate with OATI staff to implement the updated templates effective on the agreed upon date.

B. Exceptions to the WPP RSG tag template change process

Should an exception to the standard process for changing the tag templates be deemed necessary by WPP staff, WPP staff will communicate via email with all Participants affected by the proposed changes, explaining the cause of the exception and defining the modified process.

Attachment G

Backup Process for After-The-Fact Reserve Sharing Tags

A. Failure of Participant Internal Program or Reserve Sharing Computer System

If a Participant that has requested Assistance Reserve (or is providing Assistance Reserve) experiences a failure of any internal program related to reserve sharing that prevents the creation of a reserve sharing tag, or if a Reserve Sharing Request is made or in effect during a time when the Reserve Sharing Computer System is not functioning, resulting in a missing reserve sharing tag, then the Participants receiving and providing assistance reserve energy will be responsible for all necessary after-the-fact tagging.

B. Failure of Automated After-the-Fact Tagging Process

1. If the automated tag creation process fails, Participants shall contact WPP Staff to resolve failure of the automated tag creation process during normal business hours.
2. WPP Staff will
 - a. Troubleshoot with the program host and OATI to determine the root cause of the automation failure.
 - b. Coordinate with the relevant parties to implement a solution.
 - c. Communicate with the RSG via email regarding the solution and the timing of the implementation.
3. If, for any reason, it is not possible to generate the missing tag(s) via automated processes before the after-the-fact tagging deadline, either the sink Participant will coordinate with the source Participants to manually issue after-the-fact tags according to the most recent reserve sharing tag templates or, WPP staff will create the tags in order to maintain visibility under the WPP CPSE.

C. Replacing Denied Reserve Sharing Tags

1. If a Participant denies an after-the-fact tag (whether properly or not), the denying Participant will coordinate with all affected Participants to facilitate the manual reissuance of the after-the-fact tag(s). If needed, members may coordinate with WPP staff, who can issue the replacement tag.
2. If more than one Participant denies a tag, the sink Participant will coordinate with all affected Participants to resolve the cause of the denials and facilitate the



manual reissue the after-the-fact tag(s). If needed, members may work with WPP staff to issue the replacement tag(s).

3. If the problem with the original tag was due to an error in the tag template, participants will follow the appropriate procedures specified in Attachment F to make changes to the tag template.

D. WPP Tag Creation

Under normal circumstances, WPP staff will limit their involvement in manual tag creation for the replacement of denied tags. If there are other cases where manual creation of tags by WPP staff would be considered appropriate, in order to maintain visibility under the WPP CPSE, those exceptions will be decided on a case-by-case basis.



Attachment H

Balancing Authority Areas of the Participating Balancing Authorities

Alberta Electric System Operator (AESO)
Arizona Public Service Company (AZPS)
Arlington Valley, LLC (DEAA)
Avangrid Renewables, LLC (AVRN)
Avista Corporation (AVA)
Balancing Authority of Northern California (BANC)
Black Hills Power, Inc. (BHBA)
British Columbia Hydro and Power Authority (BCHA)
Bonneville Power Administration (BPAT)
Chelan County Public Utility District (CHPD)
Douglas County Public Utility District (DOPD)
El Paso Electric Company (EPE)
First LightEnergy, LLC (BNBA)
Grant County Public Utility District (GCPD)
Gridforce Energy Management, LLC (GRID)
Idaho Power Company (IPCO)
Imperial Irrigation District (IID)
BHEM Power Watch, LLC (GWA)
Nevada Power (NEVP)
NorthWestern (NWMt)
PacifiCorp East (PACE)
PacifiCorp West (PACW)
Portland General Electric (PGE)
Public Service Company of Colorado (PSCo)
Public Service Company of New Mexico (PNM)
Puget Sound Energy (PSE)
Salt River Project Agriculture Improvement and Power District (SRP)



Seattle City Light (SCL)

Southwest Power Pool (SWPW)

Tacoma Power (TPWR)

Tucson Electric Power Company (TEPC)

Turlock Irrigation District (TID)

Western Area Power Administration – Desert Southwest Region (WALC)



Attachment I

Reserved for Future Use



Attachment J

Reserved for Future Use



Attachment K

**WPP Reserve Sharing Group
MSSC and Long-Term Zonal MSSC Limit, Jointly Owned Dynamic Generation Resources,
Jointly Owned Static Generation Resources, and Multi Use Transformer(s) Tables**



1. Balancing Authority Area MSSC, WPP Reserve Sharing Group Long-Term Zonal MSSC Limit, and WPP Reserve Sharing Group Long-Term MSSC Limit.

The Participant Balancing Authorities have documented their BAA MSSCs in the table below which are used to derive the Long-Term Zonal MSSC Limit and the WPP Reserve Sharing Group Long Term MSSC limit under normal system conditions.

Zone	Resource(s)	Reporting/ Operating BAA	Maximum Allowable Zonal MSSC MW	BAA System Normal MSSC MW	Plant Capability	Modeled Outage
Alberta	Genesee #3	AESO	466	466	1286	Loss of generation
Arizona - Nevada	Arlington Generation	AZPS	1122	565	600	Loss of transmission Line
	Arlington Valley	DEAA		580	600	Loss of transmission Line
	BrightNight PV Solar Project	BNBA		300	300	Loss of tie line
	Harquahala – Palo Verde	SRP		975	1068	Loss of Transmission Line
	Gila River Blocks 2 &/ 3	TEPC		605	1100	Loss of generation
	Southpoint Energy Center	WALC		250	520	Loss of generation
	Silverhawk	NEVP		620	1055	Loss of transmission Line
British Columbia	Revelstoke – 3 Units	BCHA	1505	1505	2505	Revelstoke 500 kV main bus, three units (5MB2)
Eastern Colorado	Rush Creek Gen Tie	PSCO	1600	1600	1600	RAS Action
Southern California	El Centro Unit 3 / 230kV S-Line	IID	270	117/270	134	Loss of generation or line if scheduled greater than unit
Mountain West	Langley Gulch	IPC	1500	329	329	Unit trip of Langley Gulch – various issues
	Jim Bridger – 2 Units on RAS	PACE		1212	2120	RAS Action
Northern California	Consumnes	BANC	306	306	612	1X1 Generator outage, Gen Tie to plant
	Walnut Energy Center	TID		129	258	Loss of generation
Pacific Northwest – Montana	Noxon Plant RAS Trip	AVA	1500	540	550	Nox 239 East bus with RAS armed
	Schoolhouse	AVRN		598	598	Loss of John Day 239/500 kV transformer
	Columbia Generation Stn	BPAT		1180	1180	Loss of generation
	Rocky Reach – River Crossing 7-8-9	CHPD		410	1272	River crossing 7-8-9
	Wells	DOPD		168	840	Loss of generator step-up transformer (T1-T5) at Wells
	Wanapum – 4 Units	GCPD		440	1000	Trip of Wanapum Powerhouse #1 line or #2 line



	Centralia #2	GRID		710	710	Loss of generation
	Rim Rock Glacier Wind 2 Glacier BESS	GWA		368	368	Loss of Haylake-Marias 230kV Line
	Clearwater Wind	NWMT		750	750	Loss of generation, generator lead line, or RAS action due to transmission line trip
	Chehalis	PACW		540	540	Loss of Napavine-Chehalis 500 kV line
	Carty	PGE		490	490	Loss of generation or generator lead line
	Penstemon Solar, Wild Horse Wind, Vantage Wind	PSE		382	382	230 kV Wind Ridge – Wanapum line
	Boundary Unit #55 or #56	SCL		234	1106	Loss of generation
	Mossyrock	TPWR		203	378	Generator – Transmission outage
Texas – New Mexico	Newman 5 in 2x1 configuration	EPE	900	228	268	Loss of generation
	Afton	PNM		235	235	Loss of generation
Western Colorado	Dry Fork Station	BHBA		405	405	Loss of generation
	Craig #3	SWPW	448	448	448	Loss of generation
WPP RSG Long- Term MSSC Limit	Eastern Colorado Zone		1600			



2. Jointly Owned Dynamic Generation Resources

This table below is a listing of jointly owned dynamic generation that could be considered a BCE under certain outage configurations.

Resource(s)	Reporting/ Operating BA	MSSC MW	Plant Capability	Balancing Authorities Participating in Jointly Owned Dynamic Generation	Capacity in MW as applicable
Four Corners 4 Four Corners 5	APS	770 770	1540	AZPS 70% PNM 13% SRP 10% TEPC 7%	* * * *
Palo Verde 1 Palo Verde 2 Palo Verde 3	APS	969 969 969	2907	APS EPE PNM SRP	* * * *
Wyodak	PACE	335	335	BHBA 20% PACE 80%	* *
Wygen 1	BHBA	85	85	BHBA 76.5% SWPW 23.5%	* *
Rock Island	CHPD	216	606	AVA 10% CHPD 50% PSE 40%	* * *
Rocky Reach – River Crossing 7-8-9	CHPD	410	1272	AVA 10% CHPD 44.46% DOPD 5.54% PSE 40%	* * * *
Wells	DOPD	168	840	AVA CHPD DOPD PSE	* * * *
Priest Rapids – 4 Units	GCPD	365	930	AVA GCPD PACW PGE PSE SCL TPWR	* * * * * * *



Resource(s)	Reporting/ Operating BA	MSSC MW	Plant Capability	Balancing Authorities Participating in Jointly Owned Dynamic Generation	Capacity in MW as applicable
Wanapum - 4 units	GCPD	440	1000	AVA NWMT PACW PGE PSE	* * * * *
Clearwater Wind	NWMT	750	750	AVA PGE PSE	100 300 350 750
Colstrip 3 & 4	NWMT	740	1480	NWMT PACW PGE	1036 148 296 1480
Luna	PNM	570	570	PNM 66.33% TEPC 33.33 %	380 190 570
Hermiston / Perennial	PACW	474	474	GRID	237 237 474
Jim Bridger – RAS 2 Unit + Remote Wind	PACE	1212	2120	IPC PACE	707 1413 2120
Laramie River Station #2 Laramie River Station #3	PSCO	570 570	1140	PSCO 55% SWPW 45%	* *
Gila River - *Blocks 1 & 4 Gila River - *Blocks 2 & 3	SRP TEPC	550 585	2200	SRP 100% SRP 100%	1100 1100 2200
<i>TEP and SRP have their own share based on blocks. **Under normal conditions this is not a JOU however SRP may report entire 2200MW based on N-4 conditions.</i>					
Springerville 1 & 2	**TEPC	450		TEP	*
Springerville 3	*PNM	458		PNM SRP	* *
<i>*PNM does not own the generation, but PNM ACE is affected by the loss of generation and must request MW during disturbances to recover. **Under normal conditions this is not a JOU however TEP may report the entire amount based on potential N-4</i>					



<i>conditions</i> Springerville 4	SRP	410	SRP	*
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3. Jointly Owned Static Generation Resources

This table is a listing of jointly owned static generation that could be considered a BCE under certain outage configurations.

Resource(s)	Reporting/ Operating BA	MSSC MW	Plant Capability	Balancing Authorities Participating in Jointly Owned Dynamic Generation	Capacity in MW as applicable
Valmy	NEVP	268	395	IPC	134
				NEVP	261
					395



4. Multi Use Transformer(s)

This is a listing of transformers that are jointly utilized that could be a BCE under studied outage configurations.

Transformer(s)	Operating BA	Facility Rating	BA(s) with associated transformers	Generators	Generating Capacity in MW
John Day	BPA	1300 MVA	AVRN	Klondike I, II, III A, III GE, III Siemens, Starpoint, Hay Canyon, Golden Hills	809
			PGE	Biglow 1, Biglow 2, Biglow 3	450
					1259
Slatt	BPA	1300 MVA	AVRN	Montague Wind, Montague Solar	363
			BPA	Shepherds North (North Hurlburt)	265
			BPA	Shepherds South (South Hurlburt)	290
			BPA	Horseshoe Bend (Shepherds Central)	290
					1208
Rock Creek	BPA	1300 MVA	AVRN	Juniper Canyon, Lund Hil	299
			BPA	Windy Flats/Dooley	262
			BPA	White Creek Wind	205
			BPA	Harvest Wind	99
			PAC	Goodnoe Hills	150
					1015



Attachment L

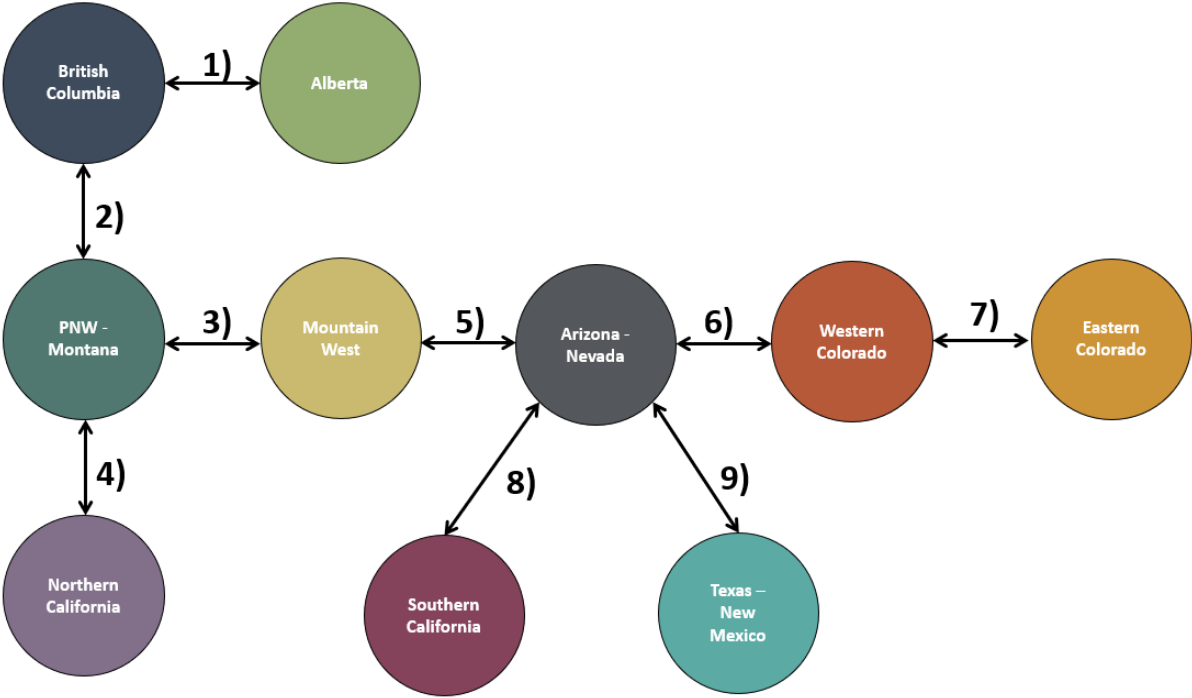
Cut Planes and Cut Plane Monitors Between Reserve Sharing Zones

The following is a listing of the WPP Reserve Sharing Group Participants that are monitors of the major transfer facilities and cut planes between Reserve Sharing Zones:

- 1) The Alberta Electric System Operator Balancing Authority (AESO) monitors the cut plane connecting the Alberta Reserve Sharing Zone with the British Columbia Reserve Sharing Zone,
- 2) The Bonneville Power Administration (BPA) Balancing Authority monitors the cut plane connecting the Pacific Northwest-Montana Reserve Sharing Zone with the British Columbia Reserve Sharing Zone,
- 3) The Idaho Power (IPC) Balancing Authority monitors the cut plane connecting the Mountain West Reserve Sharing Zone with the Pacific Northwest-Montana Reserve Sharing Zone,
- 4) The Balancing Authority of Northern California Balancing Authority (BANC) monitors the cut plane connecting the Pacific Northwest-Montana Reserve Sharing Zone with the Northern California Reserve Sharing Zone,
- 5) The PacifiCorp (PAC) Balancing Authority monitors the cut plane connecting the Mountain West Reserve Sharing Zone with the Arizona Nevada Reserve Sharing Zone,
- 6) The Southwest Power Pool's Western Balancing Authority Area (SWPW) monitors the cut plane connecting the Arizona Nevada Reserve Sharing Zone with the Western Colorado Reserve Sharing Zone,
- 7) The Southwest Power Pool's Western Balancing Authority Area (SWPW) monitors the cut plane connecting the Western Colorado Reserve Sharing Zone with the Eastern Colorado Reserve Sharing Zone,
- 8) The Imperial Irrigation District (IID) Balancing Authority monitors the cut plane connecting the Southern California Reserve Sharing Zone with the Arizona Nevada Reserve Sharing Zone, and
- 9) The El Paso Electric Company (EPE) Balancing Authority monitors cut plane connecting the Arizona Nevada Reserve Sharing Zone with the Texas New Mexico Reserve Sharing Zone.



See supporting picture of cut planes as identified above and represented between each of the zones:





Attachment M

Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to WPP Reserve Sharing Group Reporting ACE

Background:

This attachment (1) describes the operation and purposes of BPA Remedial Action Schemes (as defined in the NERC Glossary; also known as RAS) that are designed to drop generation and intentionally suspend Automatic Generation Control (AGC) actions to achieve the required flow mitigation effects of the RAS for transmission line outages that have large impacts to the integrity of the Western Interconnection, (2) explains why efforts by a Participating Balancing Authority or by the WPP Reserve Sharing Group to immediately recover WPP Reserve Sharing Group Reporting ACE following operation of this category of RAS would undermine the designed reliability benefits of the RAS, and (3) explains that the change in WPP Reserve Sharing Group Reporting ACE that results from the planned, intentional generation dropping of these RAS is not unexpected and therefore does not meet the definition of a Balancing Contingency Event.

RAS Description:

For certain types of potential exceedances of System Operating Limits and Interconnection Reliability Operating Limits (SOL/IROL), BPA has designed RAS to intentionally drop generation and suspend related AGC actions. This category of RAS is intended to mitigate flow and stability impacts associated with various contingency events on transmission facilities. These transmission facilities are designed to operate at maximum transfer levels that rely on protection provided by the associated RAS. For example, RAS for the California-Oregon Intertie system (COI) and Pacific Direct Current Intertie system (PDCI) are in this category. There are other transmission facilities in the Northwest that also rely on this category of RAS to maximize transfer capability. Additional remedial actions for this category of RAS may include other actions such as fast switching of reactive devices and insertion of dynamic braking resistors.

This category of RAS intentionally suspends AGC within the BPA Balancing Authority and any other host Balancing Authorities of the associated generating units to avoid counteracting the intended flow mitigation benefit of the RAS. Even with AGC suspended, active governors of synchronized generators are expected to respond to the changed load-resource balance and resulting frequency drop. The Bulk Electric System within the Western Interconnection, including the affected areas, are expected to perform according to the BAL-003 requirements and immediately provide primary frequency control through governor action to arrest the frequency decline and stabilize the system.

Overall system recovery continues as the affected systems adjust transfers and generation or deploy contingency reserves, and the affected systems rebalance for the new level of transfers associated with the SOL/IROL. Each affected Balancing Authority restores its AGC once



transfers are adjusted. Generation then ramps up (receiving areas with imports curtailed) or down (sending areas with exports curtailed) to the new required levels, which enables each affected Balancing Authority to recover its Reporting ACE.

The Significance of BPA RAS in Relation to Reporting ACE:

Because certain planned generation dropping through RAS action is intended to protect affected transmission facilities within the WPP from overloads, instability, or cascading outages, any action by Participants in the WPP Reserve Sharing Group to immediately recover Reporting ACE following these specific RAS events may adversely affect reliability of the Bulk Electric System. Changes to the WPP Reserve Sharing Group's Reporting ACE due to RAS actions are expected and, as such, are not Balancing Contingency Events. Generation is dispatched appropriately to accommodate the post-RAS system configuration, which may take more than 15 minutes.

BPA is responsible for notifying the WPP Staff whenever an event involving operation of this category of RAS has occurred, and therefore 15-minute recovery of WPP Reserve Sharing Group Reporting ACE is not expected for that event.

**Attachment N****Correlation Table of Participants, Reliability Coordinators, and Reserve Sharing Zones**

Participant	Reliability Coordinator	Zone	Transfer Date
AESO	AESO	AB	N/A
AZPS	RC West	AZNV	11/1/2019
DEAA	SPP	AZNV	12/1/2019
AVA	RC West	PNWMT	11/1/2019
AVRN	RC West	PNWMT	11/1/2019
BANC	RC West	NCAL	7/1/2019
BCHA	BCHydro RC	BC	9/2/2019
BHBA	SPP	WCO	4/1/2026
BNBA	SPP	AZNV	7/1/2025
BPAT	RC West	PNWMT	11/1/2019
CHPD	RC West	PNWMT	11/1/2019
DOPD	RC West	PNWMT	11/1/2019
EPE	SPP	TXNM	12/13/2019
GCPD	RC West	PNWMT	11/1/2019
GRID (North)	SPP	PNWMT	12/3/2019
GRID (South)	SPP	AZNV	12/1/2019
GWA	RC West	PNWMT	11/1/20219
IID	RC West	SCAL	7/1/2019
IPC	RC West	ID	11/1/2019
NVE	RC West	HD	11/1/2019
NWMT	RC West	PNWMT	11/1/2019
PACE	RC West	PNWMT	11/1/2019
PACW	RC West	PNWMT	11/1/2019
PGE	RC West	PNWMT	11/1/2019
PSCO	SPP	ECO	12/3/2019



PNM	RC West	TXNM	11/1/2019
PSEI	RC West	PNWMT	11/1/2019
SRP	RC West	AZNV	11/1/2019
SCL	RC West	PNWMT	11/1/2019
SWPW	SPP	WCO	4/1/2026
TEP	SPP	AZNV	12/1/2019
TID	RC West	NCAL	7/1/2019
TPWR	RC West	PNWMT	11/1/2019
WALC	SPP	AZNV	12/1/2019

**DOCUMENTATION HISTORY**

Updates:	Date:
NWPP Reserve Sharing Program	1-18-2006
Accommodation for new Balancing Authorities: SMUD & TID	6-07-2007
Combining of SPP and PACE zones into SPP-PACE zone	3-31-2008
Update of section D.3 for jointly owned generation	5-18-2008
Accommodation for new Balancing Authorities: GWA	10-13-2008
Updated terminology and addition of Attachments F, G, and H.	1-30-2009
Update of Attachment D to reflect tag template updates	3-31-2009
Update for requirement omission from 10-13-2008 version to 01-30-2009 version	3-31-2009
Clarity to sections I.5.I and H.2	4-8-2009
Update for computer failure, continuance to deliver reserve for full 60 minutes	4-8-2009
Clarification to Attachment B – Covered contingencies	5-12-2009
Update to Attachment B – Loss of wind generation due to temperature	7-1-2009
Grammar revision to definition of “Reportable Disturbance”	7-30-2009
Accommodation of information for the ACE Diversity Interchange (ADI) program	10-15-2009
Update of Attachment D – transmission mapping between NWMT and PGE	11-1-2009
Clarifying revisions and reorganization throughout; addition of language to Attachment B specifying Operating Committee authority to designate additional “Qualifying Events”; addition of Attachment K	10-18-2010
British Columbia Hydro and Power Authority NERC Registry acronym change from BCTC to BCHA	12-1-2010



Addition of definition of “RSG Committee”; replacement of most references to Operating Committee and all references to NWPP Reserve Sharing Subcommittee with references to RSG Committee; Updates of Attachment K	4-6-2011
Revision to Attachment B – addition of energy emergency as a Qualifying Event	10-5-2011
Update to section K.3. Financial Settlement with Powerdex Mid-Columbia Hourly	1-1-2012
Update to definition of Single Contingency, Section J.1.f with additional request language, and Section K.3. Financial Settlement clarification	6-7-2012
Revisions to Section 1.a of Attachment A to incorporate new requirements for photovoltaic and other types of generation; threshold in second bullet of definition of “Reportable Disturbance” lowered from 190 MW to 170 MW and updates to Attachment K Tables 1 and 3	1-10-2013
Clarifying updates throughout document including the addition of Section D.3.f, revisions to Sections E.2, E.4, F and updates to Attachments B, C, F and K	4-4-2013
Update to Attachment B and removal of (e) Unexpected loss of Contingency Reserve with new language to section (c)	6-6-2013
Updates to Attachments D, H, and K for incorporation of the NaturEner Wind Watch BA, WWA into program documentation	10-30-2013
Updates to Attachments D, H, and K for incorporation of the Constellation Energy Control and Dispatch BA, WWA into program documentation along with other clarifying updates throughout the document	11-25-2013
Updates to Attachments C, D, H, and K to reflect Nevada Power Company (NEVP), as operator of the consolidated Balancing Authority Area encompassing the Balancing Authority Areas previously operated separately by Sierra Pacific Power Company (SPPC) and Nevada Power Company (NEVP)	1-9-2014
Revisions throughout document to reflect implementation of WECC Standard BAL-002-WECC-2, to incorporate terms governing Loss of a Unit-Contingent Purchase, and to reflect the name change of the organization formerly known as Constellation Energy Control and Dispatch (CSTO) to Gridforce Energy Management, LLC (GRID)	8-15-2014 – Effective 10-1-2014
Revisions to incorporate language concerning RSG compliance with R3 and R4 of WECC BAL-002-WECC-2	8-22-2014 – Effective 10-1-2014



Clarifying revisions to the description of Contingency Reserve Obligation calculation in Attachment A, with conforming changes in body of document and other minor clean-up items 1-8-2015

Clarifying revisions to timing of requests for assistance reserve in section E.3; changes to section I.2, Major Transmission Facility Information; Attachment A, revisions regarding Balancing Authority Calculation of Contingency Reserve Obligation When Communications with Reserve Sharing Computer System Are Disrupted; and a new Attachment L, Transmission Facilities Making up Cut Planes Between Reserve Sharing Zones 4-2-2015

Clarifying revisions to section K.3.e to address how and when the NWPP Staff will complete and post calculations of applicable settlement prices 4-17-2015 – Effective 5-1-2015

Revisions to “Introduction and Overview” section to clarify that NWPP Staff are responsible for compliance reporting, not individual Participants; revisions to Section D.4.b to require at least quarterly reporting of data for R.3. and R.4 of WECC Standard BAL-002-WECC-2 10-8-2015

Addition and incorporation of the defined term “Contingency Reserve Available” and editorial cleanup revisions 4-1-2016

Clarifications related to NWPP Reserve Sharing Program participation status, determining real-time Most Severe Single Contingency, and reflection of NWPP Reserve Sharing Program requirements in Participant operating procedures 10-13-2016

Removal of language in Attachment B Qualifying Events, (d) Declaration of Energy Emergency Alert 2 or 3 05-12-2017

Effective May 12, 2017 - Participation in WECC Field Test Waiving Enforcement of BAL-002-WECC-2a, Requirement R2 05-12-2017

Revisions to harmonize definitions and other relevant provisions to NERC Standard BAL-002-2(i) and the NERC Glossary; miscellaneous cleanup and clarifying revisions 10-25-2017

Newly added definition for Operating Plan, clarifying changes to MSSC definition, and conforming changes sections D. 3., E.4. and L. 11-30-2017

Clarifying changes to term Reserve Sharing Zone, addition of terms: System Operator, BAA Net Generation, Net Generation, Actual Net Interchange, Scheduled Net Interchange; clarifying changes to Sections D.3.j, revisions to Section I.1., addition of Section I.5.d., clarifying changes to Attachment A of BAA Net Generation, Net Generation, Actual Net Interchange, Scheduled Net Interchange; revisions to Attachments D, H, and K to reflect



addition of Avangrid Renewables as a new Participant. Changes to update the WECC and NERC BAL-002 standards to conform through the entire document. 5-10-2018

Clarifying changes to section D.3.k. to clarify NWPP RSG procedures related to Energy Emergency Alerts. In addition, clarifying language was added to Section L. regarding Obligation to submit a NWPP RSG Verification Form and new Section L.2. added regarding Reporting Balancing Obligation to Notify NWPP Staff. 11-8-2018

New term added for NWPP Reserve Sharing Group Reporting ACE. In addition, new Attachment M – *Overview of BPA Remedial Action Schemes That Suspend Automatic Generation Control and Result in Expected Changes to NWPP Reserve Sharing Group Reporting ACE* and Attachment N - *Correlation Table of Participants, Reliability Coordinators and Zones*. Clarifying changes to section I.5. regarding data telemetered from Reserve Sharing Program to the Reliability Coordinator with the addition of the NWPP RSG Reporting ACE and new Section I.6. – Management of Data Related to Reserve Sharing Zones. 2-14-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 2-14-2019

Clarifying notes to Attachment B - Qualifying Events with new *note 2* and formatting (similar to NERC Definition for Balancing Contingency Event). Additional housekeeping items to clarify front page with BAL-002-WECC-2a, Section H.3. with updated contact information, corrected bulleting in Attachment A, and updated Attachment L with appropriate AESO Cut Plane facilities. 5-16-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 5-16-2019

Clarification to WECC Waiver regarding BAL-002-WECC-2a R2. Balancing Contingent Event term added and conforming changes throughout document for a Reportable Balancing Contingent Event. Reporting ACE clarification to Section I.1.f. and J.2.a. Language added to section L.1 to address RSG reporting of EEAs. Clarification of zones to response levels to Attachment C, including new tables for zones and associated BAs along with responding levels. In addition, the removal of Attachment D with new reference to NWPP RSG Tag Templates and conforming changes. Housekeeping changes to conform document with Attachment N. 7-1-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 7-1-2019



Updates to address the addition of new BA Participants, WACM and PSCO for live operation 9-3-2019. Conforming changes throughout document (Section I.2., I.4.d., Attachment C, Attachment H, Attachment K, Attachment L, and Attachment N).

7-1-2019 – effective 9-3-2019

Revisions to Attachment M by removing “Reportable” from references to Balancing Contingency Event.

8-8-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP’s MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP’s MSSC available for maintaining system reliability. 8-8-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP’s MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP’s MSSC available for maintaining system reliability. 11-7-2019

Clarifications made to section E.3. Timing of Requests for Assistance Reserve. Additions to section H.3. with respect providing ICCP failover notifications to NWPP staff. Revisions to section I.5. regarding Data Telemetered to the RCs and elimination of section I.6 as it is all covered in the revised section I.5. Revisions to section K. Settlement with the elimination of Energy In-Kind settlement and conforming changes. 11-7-2019

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP’s MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP’s MSSC available for maintaining system reliability. 2-6-2020

Housekeeping update to WECC Waiver extension to BAL-002-WECC-2a R2 on front page.

4-6-2020

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP’s MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP’s MSSC available for maintaining system reliability.

Housekeeping update to font formatting and indexing. Addition of Process Diagrams as Attachment D (General Process Diagram, Settlement Process, Calculation of CRO, and Back-up Procedures). Consistent naming of generator contingencies in Attachment K.

5-7-2020

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP’s MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP’s MSSC available for maintaining system reliability. Revised Section B. term for *Participating Balancing Authority or Participant*. Revisions to Section C.3. to address Balancing Authority versus Balancing Authority Area and program functionality. Revisions to Section F. to further clarify program functionality for



commitment of Contingency Reserve Obligation when requesting Assistance Reserve, including conforming changes to Section I.4.d. and elimination of Section 2. *Discretion of Participating BA to Carry More Contingency Reserve Than Required by Calculation of Minimum Contingency Reserve Obligation; Obligation to Make All Reported Contingency Reserve Available*. Section I.1. revision and addition of new data from Participant BAs to program (BA_FBS, BA_Ime, BA_ATEC, and BA_ADI). Updates to section L. as related to Internal RSG Reporting. Revisions to Attachment A, Section 1. to address program update to MSSC Deadbands. Attachment K MSSC Updates to PGE MSSC. 11-5-2020

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Housekeeping update to font formatting and indexing. Revisions to Section B. Terminology's *BAL-002* term. Revisions to Sections E.2. regarding actions required to respond to an EEA. Revisions to Section E.3. regarding length of time for accessing Contingency Reserve to respond to EEAs. Conforming changes to address Section B. *Contingency Reserve Available* term relating to EEA. Last, updates to Section I.1. h. & i. to reflect correct use of NI_A and NI_S. 2-4-2021

Updated language to Section H.2. to for NWPP Staff to perform analysis on each Reportable Balancing Contingency Event that the NWPP RSG experiences. 3-30-2021

Updated cover page to reflect WECC-0115 BAL-002-WECC-2a, Requirement R2, Compliance Waiver Extension 4-6-2021

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Revisions to section D.2. to address appropriate reference to Attachment A and its sections. Revisions to Attachment A. 1 to remove the 1.5 shortfall multiplier to address the current functionality of computer program. 5-6-2021

RSGC approved updates (Feb. 4, 2021) to conform documentation with new Standard BAL-002-WECC-3, effective June 28, 2021 6-28-2021

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 8-5-2021

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Clarifying changes to Contingency Reserve Available (CRA) term, clarifying changes to NWPP Reserve



Sharing Group Reporting ACE term, clarifying changes to Section D.3.i - ACE recovery period and size, clarifying changes to Section I.3.j. & k to address calculation of Reporting ACE, addition to Section F. regarding metrics for Deployment of Contingency Reserve, clarifying changes to Section H. regarding Participant responsibilities related BA footprint changes to MSSC (Unit configuration, RAS, etc.), and update to Section K.2.c. regarding annual review period. 11-5-2021

Updates to Section H. to address clarifications to Roles and Responsibilities of the Participant, NWPP Staff with on-call support 24x7, and RSG Committee. 1-12-2022

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Addition of new to Sections I.4. p. and I.4.q. as approved in 2018.11.09. 2-3-2022

Updated Attachment K Tables with new Table 4 to address AVRN's new Gold Hills Wind Project connected to BPA transformer. 3-11-2022 Housekeeping from NWPP to WPP (*NWPP doing business as WPP*), including associated email addresses. Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 5-5-2022

Updated Attachment K Tables with PAC transfer of Jim Bridger from PACW to PACE BAA, updating new MSSCs for both, effective July 6, 2022 6-29-2022

More conforming updates to address NWPP to WPP. New Section E.3. and conforming changes to address performance metric for deployment of Contingency Reserve. Updates to Section K.2. Financial Settlement from use of Powerdex to the Intercontinental Exchange (ICE) in October 2022 (Mid-Columbia and Palo Verde). Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 8-4-2022

Section B. Clarifying updates CRA Definition and conforming updates to Section D.3.b., Section E.2. and Section J.1. Section B. new term: 'Recovery Reporting ACE Target'. Performance Metric updates to Section E.4 and F. Clarifying updates to section K.2. Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 11-3-2022

Attachment K Tables updated with GCPD MSSC to Tables 1 - Priest Rapids and Table 3 - Wanapum. 12-21-2022



Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Updated Attachment K Table 1 with GCPD MSSC and clarifying change to term 'Recovery Reporting ACE Target' 2-2-2023

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Updated Attachment K Table 1 Colstrip Capacity Numbers, Table 2 Valmy Shares, and Table 3 AESO Plant Capability. 5-4-2023

Updated NaturEner Attachment H with NaturEner Balancing Authority Name change to BHEM Power Watch, LLC and BHEM Wind Watch, LLC 5-5-2023

Updated Qualifying Events from all EEAs to EEA3 only – Deleted previous section D.3.k (Script for talking to RC to prevent unnecessary EEAs). Clarifications to Sections E.2., E.3. Attachment B. 6-8-2023

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 8-3-2023

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Updated Attachment K Table 1 for PACE and GCPD along with Table 3 for PACE. 11-2-2023

Updates to conform documentation with zonal transition from Idaho and High Desert Zones to Mountain West and Arizona Nevada Zone to Section I.2., Attachments C, K, L & N. 1-24-2024

Clarifying language added to Section F, newly added Section P – Penalties for Non-Performance (Effective July 1, 2024), and conforming changes to Section I.4.c. In addition, reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Updated Attachment K Table 1 Rocky Reach-River Crossing 7-8-9 Participants. 2-8-2024

Conforming changes with the addition of the new Balancing Authority Participants (AZPS, DEAA, EPE, IID, HGMA, PNM, SRP, TEPC, WALC) effective May 1, 2024 to Attachment C, Attachment H, Attachment K, Attachment L updates and conforming changes to Section I.2., and Attachment N. In addition, consistency with use of term 'RSG Committee',



removal of standards documentation to Attachment I NERC BAL-002 and Attachment J BAL-002-WECC. 3-20-2024

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Updated Attachment K Table 1 for BANC and TEPC 5-17-2024

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 8-8-2024

Updates to Section P for a review process to allow for partial credit, to provide clarity that an entity may still receive credit for the "clock-minute averages" independently of meeting the Recovery Reporting ACE Target criteria. In addition, reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. 11-7-2024

Reviewed and updated the Operating Process (including all tables in Attachment K) to determine the NWPP's MSSC and make preparations to have Contingency Reserve equal to, or greater than the NWPP's MSSC available for maintaining system reliability. Updated Program Documentation with new terms: Balancing Authority Area MSSC, Long-Term Zonal MSSC Limit, and NWPP Reserve Sharing Group Long-Term MSSC Limit. Conforming changes to Section M to address MSSC limits, and conforming changes to Attachment K Table 1 with Maximum Allowable Zonal MSSC and NWPP RSG Long-Term MSSC Limit. 2-6-2025

Review and update to Attachment K, 1. column header from BAA MSSC MW to BAA System Normal MSSD MW. 2-12-2025

Conforming changes with the consolidation of HGMA BA into SRP BA, effective June 1, 2025, the addition of the new First LightEnergy, LLC BA (BNBA), effective July 1, 2024 to Attachment C, Attachment H, Attachment K, Attachment N. 7-1-2025

Updates to Attachment K, 1. BAA MSSC for NEVP and 2., adding back Jim Bridger for PACE and IPC. 9-23-2025

Conforming changes with the consolidation of BHE Montana's WWA BA into the GWA BA, effective October 1, 2025. 10-1-2025

Updates to Attachment K, 1. BAA MSSC for NWMT and 2. Colstrip Shares for NWMT 1-6-2026



- Updates to conform terms associated with ACE and Operating Reserve Supplemental
2-5-2026
- Updates to conform the Black Hills Power, Inc. BA (BHBA) and Southwest Power Pool BAA (SWPW) into the Reserve Sharing Program, effective April 1, 2026. Conforming changes to section I.2., Attachment C, Attachment H, Attachment K, Attachment L, and Attachment N.
2-5-2026
- Updates to conform with FERC’s 2025 elimination (Docket EL10-56) of the WECC Soft Price Cap.
3-13-2026
- Updates to MSSC tables, removal of term “WECC Soft Price Cap”, Updates to Attachments F and G to bring up to current operational practices, and conforming changes to transition from Northwest Power Pool Reserve Sharing Group (NWPP RSG) to Western Power Pool Reserve Sharing Group (WPP RSG).
5-7-2026
- Updates to conform with the retirement of BAL-002-WECC-3, effective 7.1.2026 5-7-2026
- Updates to conform with calculation of fixed CRO methodology, Attachment A and Attachment D process charger, effective 9.1.2026 5-7-2026
- Clarifying change to E.6., last sentence, to emphasize time allowed for Participant’s access to CRO, reflected as UsedCR.
8-6-2026
- Conforming changes to address deployment of Contingency Reserve in response to an Assistance Reserve request from 60 minutes to 105 minutes.
8-20-2026